GeoSciences

Department of Geology

FALL 1989

UNIVERSITY OF ILLINOIS

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FALL 1989

UNIVERSITY OF ILLINOIS

GeoSciences is the alumni newsletter for the Department of Geology, University of Illinois at Urbana-Champaign. It is published in September and February of each year.

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GeoSciences Fall 1989
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Mary Ann Glennon, RA
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Yuehui Xiao, RA

ISGS = Illinois State Geological Survey
ISWS = Illinois State Water Survey
RA = research assistant
TA = teaching assistant
USGS = United States Geological Survey

Letter from the Head

The last year has been one of rapid change for the Geology Department, and we expect the upcoming year to be the same. This newsletter is part of that change. We hope you like it; let us know what you think. The new style, format, and content are the work of Michelle Sanden Johlas, a freelance editor with many years of newsletter experience; Jessie Knox, the Department cartographer (who is also a pretty good artist—come by the Department to see some of his work); and Pat Lane, the Department secretary, whom many of you know. All of this was organized by Peter Michalove, our new assistant to the head.

GeoSciences will be coming out twice a year, in September and February. Make sure that you get news about yourself and other alumni to us so that we can include it.

The big news about the Department is that we will be staying in the good old Natural History Building and that our space is being remodeled. The work started this summer with the refurbishing of two instructional laboratories, in time for this fall's classes.

The architects are working on the designs for the remainder of our teaching and research space now. Construction will start this winter and will take two or three years, depending on how the work can be organized. Based on the work so far and the help we have received from the architects and engineers, it looks like we can make the NHB into a first-rate teaching and research facility.

Other news is that we have redesigned both our undergraduate and graduate curricula. At the undergrad level, we added a geophysics major and changed many of the courses for the geology majors, including adding geophysics and geochemistry as required courses. The new curricula will provide the basis for our graduates to be more flexible in the changing job market for geologists.

At the graduate level, we reduced the number of formal courses, added to the number of research courses, eliminated the foreign language requirement (yea or boo, depending on your view!), and changed the required general exam to be more research oriented. The overall purpose is to put more emphasis on research training to make our graduates more competitive.

We also want to announce four retirements: Professors Albert V. Carozzi and Donald M. Henderson, Jack Pullen, long-time thin section maker, and Dedy Ward, the Geology librarian. Albert and Don will be staying in the Department as emeritus professors and are as active as ever. Jack will continue to live in Champaign and may even come back part-time to make our thin sections. Dedy has moved to Washington State to pursue his painting and will consult on geoscience library issues.

Don Henderson is compiling a history of the Department (see the article on page five) and needs your input. If you have any information, photographs, or just good stories (printable in a family publication) about the department and its goings-on, he would very much appreciate hearing from you.

Also, don't forget to attend the Departmental receptions at GSA and AAPG this coming year. And make sure to attend the party after the Homecoming game, October 28!

Finally, we have a request. As you know, the employment situation in Geology is less than fantastic, and our students need as much help as possible finding jobs. If you work for an organization that sends recruiters to campuses, please encourage them to come to the Department. If your organization does not send recruiters, please send us announcements of open positions. Pat Lane coordinates our placement activities; contact her for either purpose.

Departmental News

Remodeling begins with two labs

Work crews were busy this summer as they remodeled two of the department's teaching labs, used primarily for introductory geology classes.

According to department head R. James Kirkpatrick, the complete refurbishing—paint, flooring, lab tables, chalkboards, and the like—of Rooms 241 and 251 is part of a four-year plan to remodel Geology's space in the Natural History Building.

The construction is "part of upgrading our instructional efforts and part of the overall remodeling of department space," Kirkpatrick said.

Architects also worked this summer to finalize plans for the rest of the remodeling, tentatively set to resume during the 1989–90 academic year. The construction concentrates on instructional and research lab space, not on offices, said Kirkpatrick.

He said that the overall remodeling project currently is budgeted at $1.2 million. The cost of the project is funded by the University of Illinois and is not taken from departmental funds.

Several years ago university officials decided not to move Geology to another building as previously had been discussed; because of that, funds were promised to the department to improve the existing space in the Natural History Building.

A member of the work crew prepares one of the labs for construction. Below, David Livingston, of the University's Operation and Maintenance Division, tackles the painting in Room 241, one of two labs remodeled this past summer.

Information sought for dept. history

The Department of Geology is asking all former students, faculty, and staff for help in collecting information for a departmental history that will be written sometime in the near future.

According to Dr. Donald M. Henderson, professor emeritus and coordinator of the information-gathering, a definite timetable has not been set for the project. He pointed out, however, that "if we don't get the information now, this history will never be able to be written later."

The department is hoping to hear from as many people as possible, especially the "old timers," as Henderson affectionately calls alumni and faculty from before World War II. He and others interested in the history of the department are afraid important and interesting information will be lost forever as these older departmental friends and alumni die.

Henderson said personal anecdotes as well as factual information are welcome. "We'd like any recollection of significant and/or interesting information on the department, its activities, the faculty of the time, and fellow students," he commented.

The department also is seeking citations or copies of any memorials about former faculty, staff, and alumni which might have appeared in professional journals. Henderson said if readers have seen such memorials, they need only supply the name of the journal, along with the issue date and page number with the appropriate information.

Although a deadline for sending in the material has not been set, Henderson encouraged everyone to submit their reminiscences as soon as possible, partially to see if enough information can be gathered to make the project a reality.

Send all information to: Dr. Donald M. Henderson, Attn: History Project, Department of Geology, University of Illinois, 245 Natural History Building, 1301 W. Green St., Urbana, IL 61801-2999.

Duffin takes third in local Sigma Xi contest; dozen Geology students initiated into chapter

Michael E. Duffin, a graduate student in geology, took third place in the annual Chapter Student Research Paper Competition sponsored by UIUC's chapter of Sigma Xi. His paper, "Nature of the Origin of Authigenic K-Feldspar in Precambrian Basement Rocks of the North American Midcontinent," tied with two others for third place from the 30 papers submitted for judging.

Each third-place winner received $100. Duffin's advisor is Richard L. Hay.

The Illinois Chapter of Sigma Xi, the Scientific Research Society, held its annual banquet and initiation of new members April 28, 1989. Of the four initiates promoted from associate to full membership at the banquet, three were from the Department of Geology: Linda Bonnell, Christine Kaszycki, and Joanne Kluessendorf.

Other geology students who were initiated as new members were: James A. Creemens, Michael E. Duffin, Steven J. Hageman, David E. Haymes, Joseph D. Miller, Hans W. Papenguth, Loren B. Railsback, Frederick D. Siewers, and Michelle R. Waldeck.

Three geology students also received Grants-in-Aid of Research monies from the national Sigma Xi organization during the past year. About half of the 2,000 requests for support were granted for a total of $1,400,000. Of the 1,000 or so recipients, seven were at UIUC.

Departmental recipients were Istvan Barany Jr., "Structural Analysis of Polyphase Deformation in Minas, Gerias, Brazil"; Michael Duffin, "Potassic Alteration of Precambrian Basement and Cambrian Sandstones in the Upper Midcontinent U.S.A."; and Marlon S. Wilkerson "Experimental and Computer Modeling of Three-Dimensional Fold-Thrust Geometries."

Commencement banquet, awards mark end of year

Nine students and their families, along with eight faculty and staff members and their families, marked the end of the 1988–89 year with the annual Geology Commencement Buffet.

This year's luncheon was held in the Illini Union following the morning commencement on May 21. Dr. R. James Kirkpatrick, department head, handed out diploma covers to the graduates and gave an informal speech.

Earlier in the month, the Department of Geology announced its undergraduate awards for the year.

Kathryn Desulis received the Brunton Award, presented annually to an outstanding senior.

This year's Eastwing Pick award, given annually since before 1967 by the Eastwing Manufacturing Company in Rockford, Illinois, to an outstanding undergraduate, was bestowed upon Gavin Lawson.

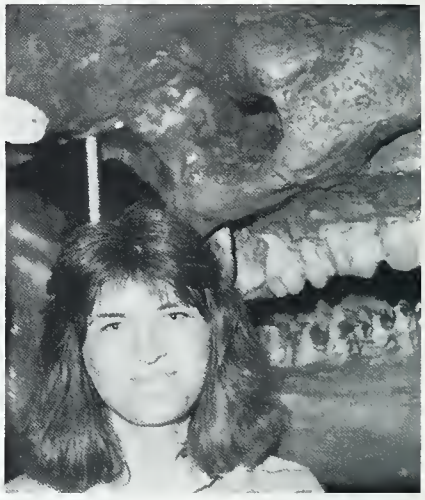
Four graduate awards also were announced.

Joanne Kluessendorf received two of those honors—Outstanding Teaching Assistant and Outstanding Woman Graduate Student. She received $300 and a certificate for her work as a TA during the Fall 1988 semester. The $1,000 award for outstanding woman graduate is based upon financial need and the candidate's potential; it is funded through an individual, private donation.

The Chevron Fellowship was awarded to Steve Hageman for the 1988–89 academic year.

Jay Matthews received $500 from the Morris M. Leighton Memorial Fund, established "for support of student expenses to cover such things as field expenses, travel expenses to meetings, thin sections, chemical analyses, and other expenses incurred while working toward a degree (either undergraduate or graduate)."

Dr. Thomas F. Anderson converses with colleagues at the 1989 Commencement Buffet.



Joanne Kluessendorf was honored with two graduate awards.

Sharon Lisa Horstman relaxes with family and friends at the Geology Commencement Buffet at the Illini Union.

27 students receive geology degrees

The Department of Geology at the University of Illinois at Urbana-Champaign granted degrees to 27 students between May 1988 and May 1989. Of those, 15 were bachelor degrees, 8 were master of science degrees, and 4 were doctorates.

Bachelor degrees

Bachelor degrees were granted to: John F. Rakovan and Alan Robert Singleton, August 1988; Steven John Chillson and Joseph Daniel Miller, October 1988; and James Alan Cremeens, James George Longson, and Tracy Ann Schneider, January 1989. Students who received their degrees in May 1989 were: Rodney Robert Caldwell, Kathryn Leigh Desulis, Stacey Lyn Durley, Brian Robert Harder, Sharon Lisa Horstman, Gavin Richard Lawson, Terry Robin Pollock, and Edward Gerard Stermer.

Master degrees

A master of science degree was awarded in May 1988 to Paula Gail Rimmer (announcement of her degree was omitted from the alumni newsletter of May 1988). Others who earned their M.S. are: David Charles Watso, with a thesis on "The Effect of Tectonic Subsidence on Sedimentation Processes during Deposition of Four Late Cambrian Formations, Upper Middle West, United States of America," August 1988; David Edward Haymes, with a thesis on "An Isotopic Study of East African and Canadian Carbonatites," October 1988; Cynthia Susan Shroba, with a thesis on "Brachiopod Biostratigraphy and Paleoenvironments across the Chesterian/Morrowan (Mississippian/Pennsylvanian) Boundary at Arrow Canyon, Clark County, Nevada"; October 1988.

In January 1989, Youn Joong Kim received his degree, with a thesis on "Powder X-ray Diffraction and Transmission Electron Microscopic Study of Silicon-Aluminum Disordering in Annealed Amelia Albite and Bancroft Oligoclase."

Three students completed the requirements for a master of science degree in May 1989: Terri Pleibel Adams, "Paleoecology and Biostratigraphy of the Zone 21 (Pennsylvanian) Brachiopod Fauna, Bird Spring Formation, Arrow Canyon, Clark County, Nevada"; Eric J. Daniels, "Origin and Distribution of Minerals in Shale and Coal from the Anthracite Region, Eastern Pennsylvania"; and Mary E. Holden, "Copper, Zinc, and Lead Absorption by Soils and Sediments from the Des Plaines River Wetlands Demonstration Site, Illinois."

Doctoral degrees

In May 1988, a doctoral degree was granted to Carl Pius Weibel, whose thesis was "Stratigraphy, Depositional History, and Brachiopod Paleontology of Virgilian Strata of East-Central Illinois." Donald Von Bergen received his Ph.D. in October 1988 for "Natural and Experimentally-Simulated Stylolitic Porosity in Carbonate Rocks." Christine Anne Kaszycki in January 1989 earned her doctorate for "Quaternary Geology and Glacial History of the Haliburton Region, South Central Ontario, Canada: A Model for Glacial and Proglacial Sedimentation."

"Carbonate Microfacies, Depositional Models and Diagenesis of the Middle Devonian in Illinois, Eastern Iowa and Missouri" was Roger James Kocken's thesis for his degree, granted in May 1989.

Faculty members receive honors

Many members of the Geology faculty receive special honors and awards during the academic year, as well as being invited to present papers and to moderate or convene panels at professional meetings. We cannot provide an exhaustive list of those accomplishments here, but some of the most notable recognitions are:

Chu-Yung Chen was chosen by the UI Research Board to receive a Beckman Research Award for 1988.

Stephen P. Altaner was elected to the council of the Clay Minerals Society, for a term from 1988 until 1991.

Craig M. Bethke was named a Beckman Associate at the Center for Advanced Study, UI, for 1988–89.

W. Hilton Johnson was elected a panel member of the Geomorphology and Quaternary Geology Division of the Geological Society of America, for the 1988–90 term.

Albert V. Carozzi received the History of Geology Division Award from the Geological Society of America.

Michalove joins staff as asst. to head

Peter A. Michalove joined the Department of Geology in February as assistant to the head, a new position.

Michalove, 38, came to Geology after serving for eight years as director of business affairs for the University of Illinois Alumni Association.

Although he has no formal training in geology, Michalove doesn't feel overwhelmed by his new role. "I attended the U of I," he explains, "and I've worked here for 10 years. My wife, Sharon, also has worked here for 10 years [currently in the Engineering Publications Office], so it's like home."

As assistant to the head, Michalove has five main areas of responsibility: directing accounting and business-related activities, overseeing nonacademic personnel, organizing the department's administrative system of personal computers, coordinating the remodeling of Geology space, and developing and maintaining alumni relations.

Already he has increased the number of personal computers for the administrative staff from three to eight. And the three computers that were in the department when he arrived have been upgraded to match the capabilities of the new equipment.

Michalove says one of his primary goals as assistant to the head is to "establish regular contact with alumni and keep in touch on a regular basis." He wants to continue and expand on the organization and involvement regarding alumni that Dr. David E. Anderson developed during his recent tenure as department head.

Michalove became a certified public accountant in 1981. His previous training was in music: a bachelor of music from the University of North Carolina in 1972, a master of music from the University of Michigan in 1973, and a doctor of musical arts from UIUC in 1977.

Geological Society of America

Annual Meeting: November 6–9, 1989

St. Louis, Missouri

Preregistration deadline: October 13

UIUC Alumni Cocktail Party
November 6 7–9:30 p.m.
Adam's Mark, Directors Row 29

Geology Club hosts annual open house

Displays from the Illinois State Geological Survey, the Illinois Department of Energy and Natural Resources, fossil displays, drill bits, and a Geiger counter were among the items viewed by visitors to the Geology Open House, held March 3–4, 1989, in the Natural History Building. The departmental open house was coordinated by the Geology Club and held in conjunction with the long-running Engineering Open House sponsored by the College of Engineering at UIUC.

According to Gavin Lawson, co-president of the Geology Club during the 1988–89 academic year, the club saw the open house as a positive way "to show as many aspects of geology, as many of the different fields, as possible" to the many people who attend the annual Engineering Open House. Lawson said that displays provided an overview of the field of geology, as well as a few specialized concentrations. Informational packets about the Department of Geology also were available.

"We were pleased with the turnout," Lawson said. "We had a continuous flow of people on Friday."

Although officially an activity of the Geology Club, Lawson said both members and nonmembers of the club were active in planning and hosting the open house. He also credits Dr. R. James Kirkpatrick, department head, with strong support and participation in making the open house a success.

Because the open house is "pretty expensive to put together," the club received financial help from the Illinois State Geological Survey and the Illinois Department of Energy and Natural Resources.

Lawson said the geology department began holding its open house as part of the Engineering Open House four years ago and that continuing participation in the event will be determined on a yearly basis. Election of club officers and plans for the 1989–90 academic year are under way.

Scanning electron microscope donated

Grim continues to support department

"A true scientist never retires," says UI Geology professor emeritus Ralph Grim. Coming to work every day during 22 years in retirement, he's living proof.

Grim, 87, was honored last October by his colleagues in the Geology Department for his financial gifts since his retirement. Grim and his wife, Fran, have endowed a permanent teaching chair that bears his name and is held by Richard L. Hay. They also have contributed a $160,000 scanning electron microscope and X-ray chemical analyzer.

The new instrument provides high-quality data on the form, structure, and chemical composition of geological material, said Stephen Altaner, the Geology professor in charge of the new lab.

The microscope and analyzer also can "give geologists the ability to interpret the paragenesis of minerals in rocks, the origin of minerals, the temperature and pressure conditions of formation for the rock, as well as the composition of fluids that affected a rock, and the nature of fossils in rocks," Altaner said.

Grim, known as the father of clay mineralogy, began working for the Illinois State Geological Survey in the 1930s and joined the UI Geology faculty in 1941.

"I'm honored by what you're doing," Grim told the group gathered for the dedication. "The University of Illinois has been extremely good to me and provided everything a scientist could want—research facilities, space, freedom to teach the courses I like and to roam the world to do my research."

The gifts to the department, he said, were given because "I want, in a small way, to repay all that's been done for me, and because I want the UI to be the dominant university for clay mineralogy in this country."

This was adapted from an article written by Catherine Foster for Illini Week.

Letters to the editor are welcome!

GeoSciences welcomes letters to the editor. If you would like to comment on the newsletter, the Department of Geology, the University of Illinois, or topics of professional interest, address your letter to:

Editor, GeoSciences
Department of Geology
University of Illinois
245 Natural History Bldg.
1301 W. Green St.
Urbana, IL 61801-2999

Please limit letters to 500 words. Letters must be signed and are subject to editing for brevity, conciseness, and clarity.

Wilma and Arnold (A.B. 42, M.S. 47) Eddings of Bloomington, Illinois, enjoy the meal at the 1988 Homecoming Brunch at Levis Faculty Center.

The Geology Department at the University of Illinois continues to be known for its outstanding program and talented students. As the cost of materials and resources increases, your financial help is needed to help keep **your** department strong and proud.

Yes! I'll support the Geology program. I'd like my gift to go toward:

_____ Teaching Materials
_____ Lab Equipment
_____ Student Support
_____ Unrestricted Department Use

Enclosed is my gift of:

_____ $10 _____ $25 _____ $50
_____ Other Amount _____

Please make your check payable to: UIF/Department of Geology.

Name _____

Address _____

_____

Class Year _____

_____ Please send me information about testamentary giving.

Return this form along with your check to: UIF/Department of Geology
University of Illinois
245 Natural History Building
1301 W. Green St.
Urbana, IL 61801-2999

Geology revises course requirements

Dr. R. James Kirkpatrick, head of the Geology Department, has announced changes in the curriculum and in course requirements.

At the undergraduate level, the department has added an option in geophysics. And, effective in the 1989–90 academic year, students will be required to take courses in geochemistry and geophysics.

The department also has revised its course offerings to comply with new LAS requirements.

Graduate students now face an increased amount of research, Kirkpatrick says, but the number of required courses has been reduced. The change was made to keep Geology "more in line with the work required by other departments."

The foreign language requirement has been dropped.

Also, the department has changed the qualifying exam from written to oral. The exam now will be more research-oriented as well.

Kirkpatrick emphasizes that the changes were made to better the education of Geology students at UIUC. The department has not reduced admission standards to bolster declining enrollment, a problem at schools throughout the country.

We salute you!

Nonacademic personnel perform an invaluable service to the department. Clockwise, from upper left: Patricia Lane, Gwyn Truitt, LuAnn Cliff-Crooks, and Barbara Elmore. Not pictured are Jean Daly and Murle Edwards.

About our cover. . .

The cover of this issue of GeoSciences displays three photographs.

In the upper left photo, then-recent alumni gathered at the 1985 GSA annual meeting in Orlando. From left: Bill Benzel, Meg Saunders, Steve Laubach, Ilham Demur, Keith Hackley, and Karen Fryer.

In the center, the Natural History Building as it appeared decades ago.

In the lower right, David Livingston, a member of the University's Operations and Maintenance Division, begins painting Room 241, one of two labs remodeled during the summer.

Steve Hageman looks on as Dr. Donald M. Henderson works with one of the department's Macintosh computers.

Dr. Donald M. Henderson retires

Dr. Donald M. Henderson became professor emeritus of Geology on August 21, 1989, the date of his retirement from the University of Illinois.

For some people, retirement signals a major upheaval in daily routine and responsibilities. Henderson says, though, that "retirement won't be all that different a life for me. I'll be coming in pretty regularly to work on my ongoing projects and following up on other things."

In addition to those activities, the department has asked him to coordinate the information-gathering for a departmental history, which he will write later.

He is well-qualified to spearhead such a project. Henderson, 68, came to UIUC in 1948 as "the eighth or ninth faculty member" in the Department of Geology. The intervening years have seen the faculty grow to more than 20.

"The growth in the department and in the field has been phenomenal," Henderson—or Hendy, as he's known around the department—says.

Mineralogy and crystallography have been the focus of Henderson's career. Most recently, he has concentrated on the local structures of minerals (particularly feldspars) and their study via nuclear magnetic resonance, electron diffraction, and transmission electron microscopy.

Another of his emphases is the use of microcomputers in education. He says his interest goes back to the days of the large mainframe computers. He has been instrumental in the Geology Department's use of microcomputers (especially the Apple Macintosh) for research and study. At the 1986 meeting of the International Mineralogical Association, Henderson demonstrated some programs he had written for mainframe computers and later adapted for use on the Macintosh. He is a charter member of the Macintosh Users Group in Urbana–Champaign, and is quite active in the group.

He earned an A.B. in geology from Brown University in 1943. He then worked as a junior geologist in Strategic Minerals Investigations for the U.S. Geological Survey from 1944 to 1945. That work involved fluorite deposits in Colorado, Utah, and Nevada.

He received an A.M. from Harvard in 1946 and a Ph.D. in geology from Harvard in 1950.

Henderson came to UIUC as an instructor in geology and rose through the ranks to become a full professor. He also has worn

many other hats in the department, including educational coordinator.

As educational coordinator, Henderson "simply looked after all the undergraduate programs and the graduate programs, and carried out policy as set by the head and the advisory committee." In addition he supervised the academic advising process and oversaw both teaching and research assistants.

When speaking of teaching assistants, the self-described "punster" says laughingly, "I have learned that it's a good idea to be nice to your TAs, because they might become your boss!" Current department head R. James Kirkpatrick used to work with Henderson as a TA.

Henderson's many accomplishments and memberships illustrate his involvement and expertise. He was a Guggenheim Fellow at University College, Swansea, Wales, during 1958–59, where he investigated the mineralogy and boron chemistry of the lower Coal Measures in the South Wales coal basin. He is a fellow of the Geological Society of America, a charter member of the American Crystallographic Association, and a member of other numerous organizations.

In 1984 he was named a fellow of the American Association for the Advancement of Science. Additionally, he is a long-time reviewer of NSF proposals.

When asked to recount the most satisfying experience of teaching at UIUC, Henderson doesn't hesitate.

"It's the total experience of teaching, and then seeing so many people go out from here and make a big name for themselves in this field.

"I treasure my association with the alumni," Hendy continues, "and the memories of them—all my former students and colleagues. I hope when they come through here, they'll stop by and see me. Everyone knows where I am."

Retirement gala planned for Henderson

The lobby of the Krannert Art Museum, Peabody Drive in Champaign, will be the site for Dr. Donald M. Henderson's retirement party.

The Department of Geology has chosen Saturday, October 21, for the event, which will begin at 5 p.m. A short musical program will be followed by a catered, sit-down dinner.

Other details of the party were not available when this issue of the newsletter went to press, but for more information or to make reservations for the party, call Patricia Lane, department secretary, immediately. Her phone number is (217) 333-3542.

Testimonial letters and other remembrances are being gathered into a volume for Dr. Henderson. All alumni interested in sending something for that scrapbook, or in sending donations for the retirement gift, should contact Pat Lane in Geology, or to Duane M. Moore. Send mail to his attention at the Illinois State Geological Survey, 615 E. Peabody, Champaign, IL 61820.

Staff member Pullen retires over summer

Jack O. Pullen, physical science technician for the department, retired from the university this past summer.

Pullen came to Geology in November 1967. For the past 22 years, he has prepared thin sections for department students and faculty.

He began his work with thin sections at CalTech under the instruction of Rudolph von Huene.

"I learned to make thin sections by making hundreds of sets of rocks and minerals for Ward's Natural Science Establishment to sell to colleges and universities."

After working at CalTech, Pullen moved to California State College, to be "on my own for about two years."

He came to Urbana–Champaign because he had told von Huene he was interested in such a move; his mentor passed that information along to Professor Fred Donath at the University of Illinois.

"One of the most impossible things I had to do," Pullen says, "was to make some difficult little samples for Professor Donath. All these samples were enclosed in copper jackets, and he wanted me to make thin sections. But he also said no material could be lost—but I had to saw or grind those jackets to make the sections!"

Now that he's retired, Pullen and his "very grand wife," Norma, plan to travel and eventually may move closer to family. In the meantime, however, they continue to live in Champaign, and he will return to the department on an "as needed basis" to make thin sections.

"Bon voyage" to Dr. Albert V. Carozzi

Traveling for and writing about geology has become a way of life for Dr. Albert V. Carozzi, and he has no intention of changing that lifestyle now that he's retired from the Department of Geology.

Carozzi, 64, describes geology as "my full-time job and my avocation."

Since his official retirement from the department in August, he already has spent considerable time in his native Geneva, Switzerland, reading proof copy of a 1,000-page memoir he compiled at the request of the Natural History Society of Geneva. The volume, which he says has turned out to be "an encyclopedia," is being published to commemorate the society's bicentennial in 1990; it covers the era from 1790 through 1815.

Carozzi and his wife, Marguerite, have an apartment in Geneva, a city they visit frequently. But he points out that they "will keep a base here in Urbana–Champaign." He jokes that he's still "commuting to work—4,000 miles away."

One other major writing project on the agenda is a textbook on sedimentary petrology that is due at Prentice-Hall Publishers in 1991.

Although Carozzi is the author, translator, or editor of some 286 papers and 54 books, he quickly responds when asked to name the most important to him.

"*Carbonate Rock Depositional Models: A Microfacies Approach* is a synthesis of my whole career," he explains. He is a person who thinks it's important to give credit to the people involved in a project, so he emphasizes that the book, which contains much of the work undertaken by graduate students under his tutelage, is not his individual effort.

"Students have contributed greatly to my work," Carozzi says, "and I work very closely with my students. This is something we did."

Carozzi's fields of specialty are statistical petrology and environmental interpretation of clastic and carbonate sedimentary rocks by microfacies approach. He also is very interested in the history of geology, with an emphasis on theories of the earth during the 18th century.

The University of Illinois became home for Carozzi in 1955 when he was named an assistant visiting professor of geology. And although he's been on the faculty since then, he's often been away from campus because of overseas sabbaticals or consulting work.

Those journeys include a two-year stint as invited professor of geology at Federal University of Ouro Preto in Minas Gerais, Brazil, and a one-year term as associate professor of geology at the University of Poitiers in France.

Additionally, he has field experience around the globe: Argentina, Bolivia, Brazil, Canada, France, Italy, Ivory Coast, Morocco, Peru, the Philippines, Spain, South China Sea, and Switzerland.

"I am grateful," he says, "for the freedom I was given to do consulting and overseas work." He says the university directly

benefitted from the arrangement, since what he learned from his trips was shared with students at UIUC, and he helped bring international students to the Geology Department. He also brought back numerous samples and thin sections for student and faculty use.

He is quite serious when he adds, "Nothing would have been possible without an understanding wife. For her, I give thanks."

Carozzi earned an M.S. in geology and mineralogy from the University of Geneva in 1947, and one year later received his doctor of science in geology and mineralogy from the same institution. He then taught there from 1953 through 1957. Carozzi became a United States citizen in 1963.

Recipient of many awards and honors, he most recently was named winner of the Geological Society of America's "History of Geology" divisional award. For the past five years, he also has been a member of the United States Committee for the History of Geology.

He is a member of many other professional organizations, including: American Association of Petroleum Geologists, Society of Economic Paleontologists and Mineralogists, American Association for the Advancement of Science, International Association of Sedimentology, and the Association of Geoscientists for International Development.

When reflecting upon his 35-year career in teaching and researching geology, Carozzi admits to being most fascinated by the "building up of a school of thinking about geology" that occurs over such a time.

He also offers several other thoughts about a career that has seen tremendous change and growth in the department and the field of geology as a whole. "My contact with graduate students has been the most enriching and rewarding," Carozzi says, "but my writing probably has been my biggest achievement."

Librarian Ward also retires from UI

Dederick C. Ward, known around the department as Dedy, was Geology librarian and associate professor of library administration from August 1980 until he retired last May.

He has moved to Anacortes, Washington, since his retirement. He plans to continue his painting, do some traveling, and act as a consultant on geoscience library issues.

Ward came to UIUC from the University of Colorado at Boulder, where he had served as science librarian for quite some time.

Ward was especially interested in the history of geology. He and Geology faculty member Albert V. Carozzi in 1984 published *Geology Emerging*, a catalog of UIUC's rare book collection in geology.

Because he had master's degrees in both geology and library science, Ward was adept at acquiring books for the departmental library.

For the current academic year, Lois M. Pausch has been named acting librarian for Geology. She is also assistant mathematics librarian and associate professor of library administration at UIUC. A nationwide search for a permanent Geology librarian is under way.

Carozzi party set for GSA meeting

The retirement party for Dr. Albert V. Carozzi is scheduled for Monday, November 6, at the meeting of the Geological Society of America.

The dinner, which is by reservation only, will be served at 8:30 p.m. in the Promenade Ballroom (E or F) at the Adam's Mark. The Department of Geology's alumni reception is being held earlier that evening at the hotel.

The party will feature slides and a "roast" of Dr. Carozzi by former students. A scrapbook of testimonials and memories also will be presented. Alumni who have something to contribute to the book should send their materials immediately to Michael R. Owen at the address below.

Owen, who studied under Carozzi and received his Ph.D. in 1984, is coordinating the event.

The "Albert V. Carozzi Library Fund" has been established to help purchase books for research. All donations should be made payable to *U of I Foundation* and mailed to Owen, who will collect them and turn them over to the Geology Department.

For tickets to the dinner in St. Louis, send $30 per person to: Michael R. Owen, Department of Geology, Saint Lawrence University, Canton, NY 13617. **Deadline for dinner reservations is October 13.** For more information, call Owen at (315) 379-5975.

Profile: R. James Kirkpatrick

Dr. R. James Kirkpatrick had "mixed emotions" about becoming head of the Geology Department, but one year into his appointment, the 43-year-old professor seems at ease in the post.

Tipped back in his chair with feet propped on the desk, Jim (as he prefers to be known) recounts his first identifiable experience with geology.

"My dad tells this story all the time," he says with a chuckle. "I collected my first rock when I was six years old and we were on a fishing trip in the Catskills. The rock looked like it had shells in it, but it turned out to be Devonian brachiopods. My parents still have that rock in their house."

Growing up in the Adirondacks provided plenty of exposure to the natural world, and Jim says he's wanted "to be a geologist since the ninth grade."

He didn't know then that geology would lead him to live in four different states and in Cambridge, England, or that he would become head of a department brimming with "quality and enthusiasm in the faculty."

This article was written by Michelle Sanden Johlas, editor of GeoSciences.

The road to the University of Illinois began at Cornell University in Ithaca, New York. It was there that "a friend of mine said, 'For some reason, rocks make sense to you,'" and there that Jim earned an A.B. in geology in 1968.

Attended field camp

While enrolled at Cornell, he attended the University of Illinois Field Camp. At the time, Cornell had arrangements for its students to attend the UI camp since it didn't have one of its own.

That experience led him to enroll as a graduate student at UIUC. He completed his Ph.D. in geology in 1972. At the time, his primary concentration was on the crystallization kinetics of igneous rocks.

Although the specific focus of his work has changed over the years, "my research interests have always been in geochemistry, mineralogy, and petrology," he says.

He worked as a senior research geologist for Exxon Production Research in Houston for one year, then became a postdoc research fellow at Harvard University. During his two years there, he continued to explore the crystallization kinetics of igneous rocks, including lunar samples.

The Deep Sea Drilling Project of the Scripps Institution of Oceanography provided Jim's next experience. He characterizes his interests at that time as "about half of the 'usual' stuff [crystallization kinetics] and half the petrology and geochemistry of mid-ocean ridge and ocean island igneous rocks."

Back to the U of I

In 1978, Jim returned to UIUC as an assistant professor in the Department of Geology.

He came back, he says, because "I felt it was a place with an outstanding program in materials science and chemistry and one of the best places I could do my work on crystallization processes."

Jim was promoted to associate professor in 1980 and to professor in 1983. He continued his work with crystallization, and in 1982 became interested in "the then newly developed field" of solid-state nuclear magnetic resonance spectroscopy.

Topics for research broadened: structure of minerals, structure of glasses and melts, processes of weathering and hydrothermal alteration, structure of clay minerals, and clay-water interaction.

One highlight of his career occurred in 1985, when he was appointed an Overseas Fellow at Churchill College in Cambridge,

England. He explains that only four such fellows are named per year, and "it was quite an honor. There is an outstanding mineralogy group at Cambridge, and I collaborated with them on mineral structure work."

He continues, "That was the start of much of the work we've been doing on phase transformations of minerals."

Named dept. head

Another career highlight came in 1988 when he was named head of the department. He replaced Dr. David E. Anderson, who relinquished the post so he could devote more time to teaching and research.

Jim admittedly had mixed emotions about taking the new post, partially because of the time constraints it would place on research. "But I was very gratified to find out I had very broad support across the faculty," he says. "It was a challenge."

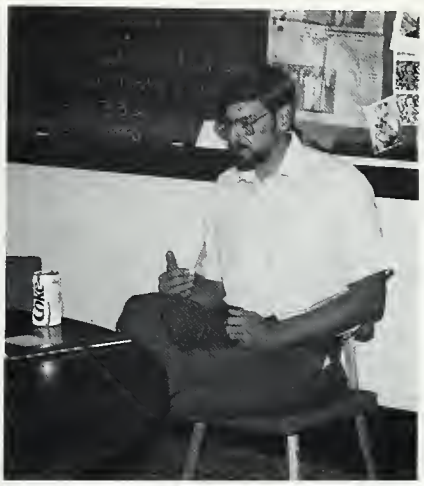
Before he will even discuss his goals for the department or the things he has accomplished so far, Jim lauds the faculty. "They've all worked hard and put their own time and effort into projects, like the course and curriculum revisions. That makes a tremendous difference."

He names the quality and enthusiasm of faculty members as the department's greatest asset.

Getting in the Top 10

His immediate short-term goals include the remodeling of the Natural History Building, revision of the department's general education offerings, and filling two open faculty positions.

Jim articulates one long-term goal as department head: "I want to return this department to one of the outstanding earth science departments in the country."



Jim leads a summer faculty meeting in the Wanless Room.

Although he believes the department is ranked in the Top 20, he would like to see it move into at least the Top 10. He acknowledges that this is not a new goal for the department; it has "been ongoing for 10 years, since John Hower came. Dave [Anderson] made important contributions in that regard, as well. A goal like that can't be reached in just a few years."

That long-term goal has five main components, Jim says. He would like to improve and increase outside funding of the department, broaden and maintain alumni support, improve the department's instructional efforts, attract more quality graduate students, and improve the quality of the department's research facilities.

All of those areas currently are being addressed, with some results already obvious. For example, two labs were remodeled this summer, and plans are under way for further renovation.

Jim knows there are some obstacles in the path of success. Beginning about four years ago, the department—like other geology departments across the country—started seeing a decrease in enrollment.

Jim adds, "One other major problem we're facing is the lack of jobs for geologists." That fact makes it hard to attract quality faculty and students, among other things.

An integrated view

He does, however, have hope for the field of geology in general. "I believe geology is heading towards an integrated view of how the earth works and how it worked in the past.

"The underlying, overall principle in both teaching and research in geology is the need to understand the earth—and all planetary bodies—as integrated systems. And even though we might take different specific approaches, we're all trying to understand the earth as an entity. I feel very strongly that the divisions between hard-rock and soft-rock geology no longer exist. We move in and out of specific research topics as the field evolves."

Just as the discipline of geology has evolved, so has Jim's outlook after his first year as department head.

"I try to be a hands-on administrator, but I'm not afraid to delegate," he says. "Professionally, I see myself as pretty intense, but when I set that aside, I try to relax."

Jim also comments, "I work really hard and have some organizational abilities, but my biggest asset as head is my commitment to the department, both as an alumnus and as a faculty member."

He has discovered "how to become much more efficient in my research efforts," since he

has less time for such pursuits. Still, he gets "very involved with my grad students and their research."

He says, "My favorite part of teaching is still field trips, because there is a lot more learning going on than in the classroom, and you get to know the students personally."

He continues to teach a petrology course and a graduate course, in addition to research on phase transformations in minerals, structure of mantle minerals, and reactions in cement.

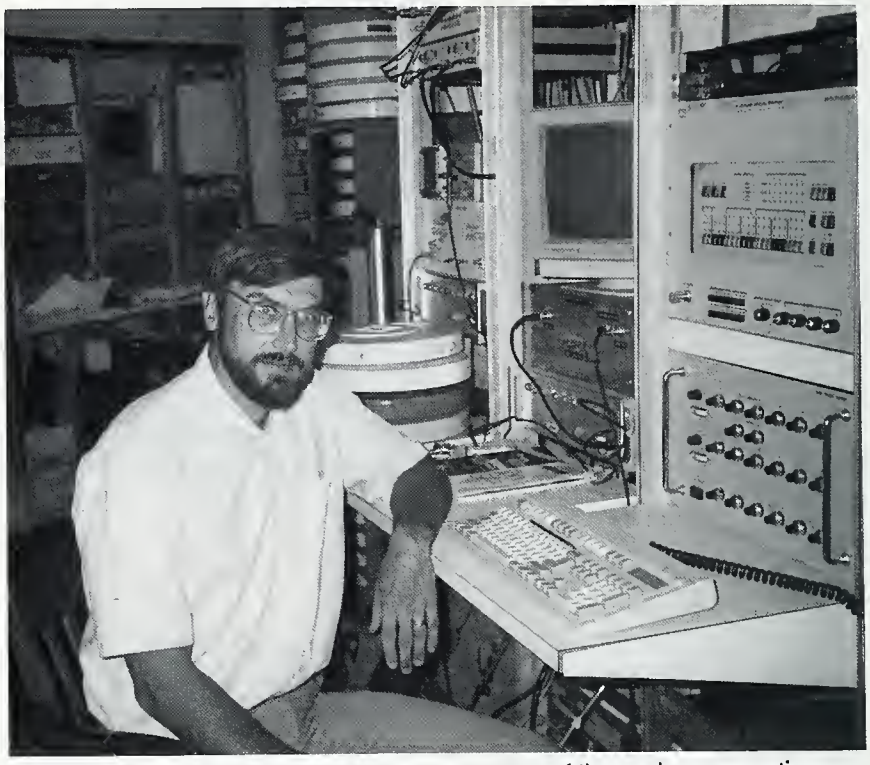
When he's not at the office, Jim likes to do things outdoors, such as hiking and fishing. He likes to read as well, and describes his tastes as "eclectic." He and his wife, Carol—former graduate/undergraduate secretary in the department—both like to garden.

And up until last year, Jim competed in six or eight track and field meets annually. Around 1980 he became a competitor in the Master's Track and Field Program, picking up the javelin and discus throwing he had done while in college.

The weight-lifting and squash-playing he did for training and conditioning paid off: he came in second in the 35–39 age group in the National Weight Pentathalon. In 1988 he was ranked in the Top 20 nationally in shot put/discus/javelin for people 40 to 44 years old.

His job as department head has put a stop to competition, but he still lifts weights, throws, and plays squash.

Although his track career may be over, Jim Kirkpatrick is determined to use that competitive spirit to help make the Geology Department the best it can be.



Jim Kirkpatrick sits at the computer that runs one of the nuclear magnetic resonance spectrometers that his research group uses to investigate mineral and glass structure, the chemistry of mineral-water interaction, cement chemistry, and structural phase transitions in minerals. The lab, which Jim runs jointly with Professor Eric Oldfield of the Chemistry Department, was the first of its type in the earth sciences. The oscilloscope (below) also is part of the lab set-up.

Some alumni still "missing"

In the May 1988 newsletter, a list of "lost" alumni was printed along with an alumni directory. We heard from quite a few of those missing alums in response to that list. This issue we're again printing an updated listing of Geology's "missing" alumni; if you know the whereabouts of one (or more!) of these individuals, please drop a note to Pat Lane, department secretary. Thanks for your help!

Budd B. Adams
Bruce R. Adamson
Allen Arthur Aigen
Alan Aller
David William Allman
Ernie D. Allsop
Glen P. Anderson
Leslie Grove Anderson
Sumner M. Anderson
Pauline Babet
Jeannine Balsamo
Evyn G. Barnard
Richard B. Beals
Vivian Beeler Jr.
Allan G. Bird
Lowell R. Bostrom
William P. Brackin
Steven M. Brennecke
Mary E. Brownlee
Edward F. Buck
Craig E. Butler
Louis W. Butler II
Jean McGinnis Callahan
Terry L. Carius
Peter Alexander Carr
Brian Williams Carss
Paul Edward Cassity
Sheryl A. Chargo
Livingston Chase
Russell J. Church
Sally A. Cole
James W. Dean
Sergio Na Debrito
John James Delimata
Andrew T. Denaray Jr.
George A. Dickie
Harlan Bernard Dodge
Bruce Edward Dollahan
Eugene Gerald Dorn
Frank W. Doyle
Erhan Dulekoz
John K. Eccles
Richard Alden Elliott
Michael J. Erickson
Wesley Tyler Erickson
John Wood Fanning
Jeanne Seaman Farnum
James Norman Fears
Dan Edwards Feray
Susan M. Camp Fiello
Paulo M. Figueiredo-Filho
Mark Edward Finley
Larry S. Foreman
Timothy Devine Fosser
Stanley Harold Frost
Mark Theodore Fulmer
Linda Provo Fulton
Jay Owen Gallagher
George J. Gatsis
Constance Elaine Gawne
Douglas Gleim
Michael Edward Glowacz
James Edward Goodin
Stephen F. Greb
Kurt A. Grove
Peter L. Hahn
Latif Said Hamdan
Susan P. Harp
Denver Harper
Lois Schulz Herring
Peter A. Hetherington
Philip R. Hodgson
Paul E. Holm
James Roy Howard
John Bancroft Hunt
Richard Francis Inden
Thomas L. Jones Jr.
William Kagami
Atilla U. Kaprali
Fred Kern Jr.
Elsa M. Kiwiet
Rodney A. Klassen
William J. Knapp
Alfred George Knoll
Donald Carl Kochinski
Anthony C. Kuhn
John Thomas Kummer
Michael B. Lamport
Ralph George Larson
Yaghoob Lasemi
Joseph J. Letko
Robert A. Linka
Teresa Luning Lucas-Salgado
Tso-An Ma
David Walter Mack
Roger Conway Malan
Raul D. Maruri
Donald Leo Maurer
Jorge I. Maycotte
Elmo James McGovern Jr.
Samuel Carl McMackin
Michael G. McMahon
Albert Lawrence Meyers
Michael Charles Moore
Faris Knoble Moyer
James B. Murowchick
Robert E. Murphy Jr.
Lynn L. Napoleoni
Joseph Ichiro Naruishi
Wilbur Fayette Near Jr.
Mark Denny Nelson
Marylinn Nicholson
Donald Eugene Noll
Frank John Nowak
James P. O'Connor
Kathleen M. O'Neil
Kenneth Gene Page
Robert L. Painter
Gary L. Patterson
Dwight Pearce
Patrick T. Philbin
Ruth Violet Roselle Plain
Donald Robert Ramberg
Michael T. Reade
Richard B. Ridley
William Franklin Ripley
Donelson A. Robertson
John Robert Rogers
Leah L. Rogers
Robert W. Root
Jack J. Rosecrans Jr.
Leslie R. Schenck
Sohrab Shayani
Kenneth Ray Sheppard
Fred R. Shirley
Joan Caperton Shorter
Raymond Shrode
Sushil Kumar Siddhanta
Alan F. Skrzyniecki
Raymond Leroy Slovinsky
Earl Lloyd Soley Jr.
Charles Arnold Sorrell
Roy H. Spitzer
Donald West Sprouse
Rakchai Srilenawat
Thomas R. Stewart
Kenneth Allen Stone
Hayashi Sugahara
Bruce Irvin Susong
Robert J. Szumal
Linda A. Tills
John E. Trummel
Robert Francis Urbano
Richard L. Vega
Arthur Lee Vincent
Carl Wayne Vinyard
John William Vukovich
Beulah M. Waggoner
Elizabeth A. Rorig Wahlgren
Margaret M. Pendleton Weber
Melvin Irenaeus Weidner
William Charles Welch
Edward G. Wildanger
Timothy N. Willand
Breno Wolff
Larry Don Wood
William Frederick Wrath
Ronald Jacob Yochem
Warren Gilbert Ziebell
Ronald K. Zimmerman

Alumni News

The heart of any alumni newsletter is, of course, information about the alumni themselves. This material is gathered primarily from the reply forms and correspondence you send to the department, although some tidbits are provided by faculty and staff who have seen or heard from you. The news in this issue is the latest information we have about these individuals.

Take time to complete and return the reply form at the end of this section—your news is important to us!

For your convenience, this section has been broken down into decades. If an individual was in Geology from part of one decade into another, he or she will be listed according to the date of the last degree granted from UIUC. (Please note that items do not appear in alphabetical order within each decade.)

THIRTIES

Willis M. Decker (B.S. 39) retired in 1986 as vice president of exploration at Jet Oil Company. He had held that position since 1978. Previously he had worked for Cities Service Oil Company.

Since his retirement, Decker has traveled and also done some geological work in Oklahoma.

Governor Bill Clinton appointed **Charles J. Hoke** (A.B. 37) to the Arkansas State Board of Registration for Professional Geologists in 1987, for a term that will expire October 1, 1990.

FORTIES

James E. Lewark (B.S. 39, M.S. 40) retired from Exxon in 1977 after 37 years service with Exxon and its predecessors. After working in the Midwest and the Southeast, in 1967 Lewark moved to Houston, where he is still living. He and his wife like to travel and do volunteer work; he also reports that he is playing tennis and golf and working on genealogy.

The Geological Society of America awarded the Penrose Medal to **Robert S. Dietz** (A.B. 37, M.S. 39, Ph.D. 41) last October 31. In his acceptance speech, Dietz cited two of his mentors from UIUC: Professor Frances P. Shepard and Harold R. Wanless.

Dietz is a geologist and oceanographer at Arizona State University in Tempe.

Dr. William Pampe (A.B. 47, M.S. 48), Regents' professor of geology at Lamar University in Beaumont, Texas, was named Distinguished Faculty Lecturer last October 17. He presented an address on the "History of the Oil Industry in Southeast Texas."

Pampe joined the Lamar faculty in 1966 after working as an exploration geologist for the Pure Oil Company in Oklahoma for 12 years.

K. O. Emery (B.S. 35, Ph.D. 41) is living in Falmouth, Massachusetts, where he is working on problems of relative sea level change caused by local neotectonism, using tide gauges of world, archaeology, and sedimentology.

From 1945 until 1962, he taught marine geology, oceanography, and similar subjects at the University of Southern California. After that, Emery conducted research at Woods

Hole Oceanographic Institution until 1979.

Allen F. Agnew (A.B. 40, M.S. 42) retired in 1981, but he still is courtesy professor at Oregon State University, where he teaches one course each fall quarter, alternating between engineering geology and hydrogeology.

He chairs the Oregon Board of Geologist Registration. Agnew also leads the Ground Water Advisory Committee to the Oregon Department of Water Resources.

In 1988, he and two others co-wrote *Perspectives on Water: Use and Abuse*, a collection of essays covering "the gamut of our water quantity and quality problems and opportunities."

Robert Harold Kennedy (B.S. 41) retired from Inland Steel Company in East Chicago, Indiana, in 1981. He served 10 years as a research metallurgist and 30 years as an industrial engineer.

FIFTIES

Lester W. Clutter (B.S. 48, M.S. 51) is a consulting Log Analyst in Tulsa, Oklahoma. He is an AAPG certified petroleum geologist.

Indiana University awarded its "Brown Derby Award" to **Dr. John B. Droste** (B.S. 51, M.S. 53, Ph.D. 56) last April. An authentic brown derby and a bronze plaque are presented annually "to the faculty member who is deemed outstanding and popular with his/her students, and who merits their highest respect."

Droste joined the faculty at Indiana in 1957.

Gene W. Heien (B.S. 59) was appointed chair of the Department of Geological Sciences at Ohio University in July 1988. He has been on the faculty since 1966.

Carl G. Davis (B.S. 59) teaches basic chemistry, earth science, geology, and physical science at Danville (Illinois) Area Community College. He reports that especially popular topics are continental drift, volcanoes, and earthquakes; students do not, however, generally share his enthusiasm for historical geology and the Pleistocene.

Homecoming party planned for '89

All Geology alumni and friends are invited to the Homecoming '89 cocktail party, to be held at the home of department head R. James Kirkpatrick and his wife, Carol.

The party will begin after the Homecoming football game against Wisconsin, October 28. Kirkpatrick said that alumni and friends do not need to attend the game in order to come to the party.

Please RSVP by October 15 to Patricia Lane in the Department of Geology: call (217) 333-3542, or write to her care of the department, University of Illinois, 245 Natural History Building, 1301 W. Green St., Urbana, IL 61801-2999.

Fairbanks, Alaska, is home for **Wilford F. Weeks** (B.S. 51, M.S. 53), professor of geophysics at the Geophysical Institute, University of Alaska–Fairbanks. He is continuing his research on the geophysics of sea ice and also serving as chief scientist at the Alaska Synthetic Aperature Radar Facility (ASF).

Weeks explains that ASF is the U.S. receiving station for earth-viewing radar data from a series of three satellites that will be launched beginning in 1990. The collected data "will greatly advance studies of the world's sea ice covers (which is where I fit in) and contribute to all sorts of other studies in oceanography, glaciology, and geology."

In 1988 he was elected a fellow of the American Geophysical Union. This past August he was awarded the Seligman Crystal by the International Glaciological Society.

Richard H. Howard (M.S. 55), geologist with the Illinois State Geological Survey, was named 1988 Petroleum Professional of the Year by the Illinois Oil and Gas Association. The award was given in recognition of his 30 years of "highly valued service to the petroleum industry and to the Geological Survey." He joined ISGS in 1958.

Howard's work has enhanced petroleum exploration in the Illinois Basin. He received a Best Paper Award at a regional meeting of the Geological Society of America for his work focusing on a buried ancient river system beneath southern Illinois and nearby Indiana and Kentucky. His study of petroleum-filled sandbars within the ancient valleys provided a game plan for future oil exploration in the basin.

The 1988–89 academic year found **Dr. Ronald Willis** (Ph.D. 58) in Baghdad, Iraq, on a Fulbright grant. In addition to learning about the people and culture of Iraq, he taught courses in petroleum geology, biostratigraphy, and sedimentation.

Willis has been acting chair of the geology department at the University of Wisconsin–Eau Claire.

Since 1986, **Dale Owen Reese** (B.S. 56) has been an independent consultant and oil producer exploring for and producing oil and gas in Texas, Louisiana, and Mississippi.

After his undergraduate work at UIUC, he earned an M.S. from the University of Kansas and worked for two years with Aramco in Saudia Arabia. That was followed by four years with Pan American in Jackson, Mississippi, then four years as an independent in Jackson, and another four years for various Jackson companies. In 1974 he moved to Dallas to work with Bridger, Lear, Vaughn, Adena. Although he left the firm in 1986, he continues to live in Dallas.

William W. Hay (M.S. 58, former staff member) and his colleagues used a computer to draw a map of the Earth as it looked when dinosaurs lived. Although that was some 10 years ago, France has issued an airmail stamp with that map on it to commemorate the 10th anniversary of the Deep Sea Drilling Project in the South Atlantic.

The project is an international effort to understand land and ocean conditions in the Mesozoic era.

M. William Pullen (Ph.D. 50) is living in Largo, Florida. He became professor emeritus in geosciences at Purdue University in September 1979. His specialty is subsurface geology from boreholes and field geology; he had an extensive worldwide consulting practice in solution mining and subsurface storage and disposal.

Alan J. Scott (B.S. 55, Ph.D. 58) is chief scientist, Gulf Coast, for RPI International, which is based in Boulder, Colorado. Scott taught at the University of Texas at Austin for many years before joining the private sector in 1984.

Since 1984, **R. Budiharto** (B.S. 59) has been general manager with P. T. Digicon Mega Pratama in Jakarta, Indonesia. From 1974 until he took his early retirement in 1984, he was with Arco as a staff geophysicist.

The Desert Research Institute building at the University of Nevado, Reno, has been named in memory of **George Burke Maxey** (professor, 55–62), who died in 1977. He was executive director of DRI's Water Resources Center at the time of his death.

The American Association of Petroleum Geologists last year elected **John W. Shelton** (M.S. 51, Ph.D. 53) vice president. He began his term on AAPG's board July 1, 1988.

Shelton is vice president of Masera Corporation in Tulsa, Oklahoma, and the V. Brown Monnett Professor of Geology at Oklahoma State University.

Beverly Ann (Solliday) Pierce (B.S. 50) and her husband, **John (Jack) Pierce** (B.S. 49, M.S. 50) have lived in Annadale, Virginia, for 26 years. They are the parents of four daughters. He works for the Smithsonian Museum as a sedimentary geologist.

Richard M. Winar (B.S. 53, M.S. 55) is vice president of environmental sciences and manager of the Albuquerque office of Deuel & Associates, an environmental science and engineering firm.

Francis W. Allen (B.S. 54) is superintendent of technical training and services at The Peoples Gas Light and Coke Company in Chicago. Previously, he had spent seven years as manager of operations at North Shore Gas Company, Peoples's sister company in Waukegan. Allen has been with Peoples Gas since 1956.

SIXTIES

Stephen H. Kirby (B.S. 67) is halfway through his term as secretary of the Tectonophysics Section of the American Geophysical Union. His term began July 1, 1988, and expires June 30, 1990. Kirby is senior research geophysicist in the tectonophysics branch, U.S. Geological Survey, in Menlo Park, California.

Stefan Gartner Jr. (M.S. 62, Ph.D. 65) teaches in the Department of Oceanography at Texas A&M University.

Mohamed T. El-Ashry (M.S. 63, Ph.D. 66) works at the World Resources Institute in Washington, D.C.

Since 1984, **George H. Keller** (Ph.D. 66) has been vice president for research and graduate studies at Oregon State University. In January 1987, he also assumed responsibility for international programs: international students at OSU, the student and faculty exchange program with 24 institutions in 15 countries, and research and development.

Involved in research projects in the People's Republic of China since 1979, he recently completed a three-year study of sediment stability and bottom dynamics associated with the outer part of the Yellow River delta.

Keller also chairs the University National Oceanographic Laboratory System, an association of 56 universities with responsibility for coordinating use of the nation's oceanographic facilities, as well as planning and designing new ones.

Doug Anderson (B.S. 69) has a consulting firm in Hazleton, Pennsylvania.

Margaret S. Leinen (B.S. 69) is associate professor and associate dean of the School of Oceanography at the University of Rhode Island.

The Kerr-McGee Corporation in Oklahoma City employs **Donald R. Williams** (M.S. 62) as a senior exploration geologist. He has worked for several North American oil and gas exploration firms in several locations, including Midland, Texas, and Calgary, Canada.

"I like to work out the geology of an area and see my ideas and prospects tested by the drill bit," he writes. "I've drilled my share, or more, of dry holes, but have lucked out a few times with some field discoveries. Despite the depression in the oil industry I have somehow managed to stay employed."

Williams and his wife, Elaine, have established the Swinging W ranch in eastern Oklahoma, where they raise Brangus cattle and grow pecans. They plan to retire there in a few years.

Williams also reports that one of his five children, Charles Sidney, is a senior geologist for the Gulf Corporation in Calgary, Canada.

Joan Gordon (M.S. 62) spent the summer of 1988 helping to renovate a 12th-century chateau-fort in the Ardeche (southern France), just above Aix. She "had a good time and saw a few rocks."

Robert W. Pierce (Ph.D. 69) chairs the Department of Physical Sciences at Eastern New Mexico University, where he also is director of the electron microscope facility. He was elected president of the Portales Kiwanis Club in 1988.

Richard A. Davis Jr. (Ph.D. 64) has been appointed to a Distinguished Professorship at the University of South Florida.

In March 1988, **Chris Heath** (M.S. 63, Ph.D. 65) was transferred from Cairo to London and is now working on "new ventures" for Amoco Production Corporation in Europe, Africa, and the Middle East. By December, he had traveled to no fewer than 10 countries and was enjoying it "enormously."

SEVENTIES

The associate dean of graduate studies in the Office of Academic Affairs at the University of Wisconsin–Green Bay is **Ronald Stieglitz** (M.S. 67, Ph.D. 70). He assumed the half-time position at the beginning of 1989; he continues to teach in the university's natural and applied sciences program. He joined the faculty in 1976.

Stieglitz was honored by his colleagues in 1983 with the Founders Association Award for Excellence in Scholarship. He was cited for his effectiveness in involving both graduate and undergraduate students in his research and for increasing the visibility of the university's earth sciences program through his professional activities beyond campus.

Robert W. Von Rhee (M.S. 77) now lives in Tulsa, working as an independent petroleum geologist.

Bill Rice (M.S. 74) works with hydropower for Wisconsin Electric in the Upper Peninsula of Michigan. He is in charge of the entire Menominee River system, running the reservoirs that control 13 dams.

Rice was elected to the local school board in 1988 (he has two daughters) and also is active in helping the county locate a new landfill site.

Mark Reinbold (M.S. 77) works for RPI in Boulder, Colorado, and as of December

The home of Ed Bushman (B.S. 41) —second from left in the photo—in Laguna Beach, California, was one of eight homes where a severe storm on January 17, 1988, cut approximately 30 feet deep into the shoreline. He reports that among other things, he and his family lost their sewer line and stairs from their beachfront house. More than 500 feet of shore was severely eroded. Repair work on the beach was quite extensive and, among other things, involved 14 million pounds of granite. Bushman comments, "An interesting, if quite expensive, lesson in marine shoreline erosion."

1988 was involved in a Siluro-Devonian West Texas project.

Chevron transferred **Jay Scheevel** (B.S. 79) from Midland, Texas, to San Francisco, where he is working on Chevron's exploration program in Cabinda, West Africa.

Steve Tissue (M.S. 77) was promoted to division geologist in the production department for Chevron in New Orleans.

Anadarko transferred **Mike Hansen** (Ph.D. 75) from its Denver operation to Dallas.

Steve Jamrisko (B.S. 71) declined an assignment to Yokohama and has another three-year tour of duty in Washington, where he is an officer in the Naval Supply Corps.

John Drew Mitchler (B.S. 78) received his M.B.A. in 1987 from the University of Illinois. He then moved to Novato, California, where he joined Harding Lawson as project coordinator for hazardous waste cleanup projects. He recently transferred to Harding's Denver office to help with the cleanup of the Rocky Mountain Arsenal.

"All visitors in Denver are welcome to call: (303) 460-1162!"

Jerry P. Walker (M.S. 75) is chief geologist for Sierra Resources in Reno, Nevada.

Margaret Watson Rutledge (B.S. 74) earned a master's in scientific and engineering management from West Coast University in 1984. Now she is manager of financial services for Mesa Consolidated Water District in Costa Mesa, California. She reports to the general manager/CEO and is responsible for finance, customer service, and data processing. She says "the job would be impossible without a technical background."

She has a three-year-old son, Andrew, who loves to backpack and "is crazy about rocks." Her husband, Jim, is a tenured faculty member in physics at the University of California at Irvine.

Hunt Oil Company in Denver employs **John J. Barnes** (M.S. 73) as a senior geologist in frontier exploration, concentrating on the Basin and Range. Much of his work focuses on the Paleozoics of Nevada.

Although health problems "put me in a wheelchair four years ago, I can still spend exploration budgets with the best of them."

He and his wife, Nancy, have a three-year-old daughter, Jennifer.

David W. Rich (M.S. 77, Ph.D. 79) is president of Geotech Computer Systems, which provides computer hardware, software, and services to earth scientists in oil and gas, mining, environmental/groundwater, government, and education. As president, Rich's duties include management, marketing, sales, training, project work, and some programming.

In August 1988, he reported that the company moved out of the house and into an office building; the firm then consisted of three full-time and two part-time employees. "Things are moving along," he said, "although it takes long hours and still doesn't pay as well as my oil company job. It is rewarding, though, to help people solve problems, so I'm enjoying it."

Chang L. Lin (Ph.D. 70) is chief of water resources planning for the Nova Scotia Department of the Environment. The International Association of Hydrogeologists (Canadian National Chapter) sponsored an International Groundwater Symposium in Halifax in May 1988. Lin edited the symposium's proceedings, 29 technical papers.

Donald R. Ganser (B.S. 71) works with Chen & Associates in Denver as chief hydrogeologist. He is responsible for all groundwater work and directs projects related to groundwater contamination and groundwater supply.

Previously, he spent 12 years with Woodward-Clyde Consultants in Denver and New York/ New Jersey. He was lead geologist for the Merrill Creek Reservoir Project in western New Jersey and resident hydrogeologist at the Rio Blanco Oil Shale Project.

This past January, **Frank R. Ettensohn** (Ph.D. 75) went to Novosibirsk State University in the Soviet Union to teach geology as a Fulbright Scholar.

Ettensohn is professor of geology at the University of Kentucky, where he has been employed since leaving UIUC. He teaches a variety of courses and also recently continued research on the relationships between epeiric, marine black shales, and tectonism with NSF support.

He is married and the father of two children: Clare, six, and Marc, three.

William B. Size (Ph.D. 71) is at Emory University in Atlanta. He writes: "After a 50-year history of the Geology Department at Emory University, and my own 15 years at Emory, the Board of Trustees voted to close the Geology Department, effective August 31, 1989. Replacing it will be a much diluted 'Program in the Geosciences.'"

Size chaired the geology department, which offered B.A., B.S., M.S., and Ph.D. programs. Its introductory geology courses enrolled 600 per two-semester academic year.

He organized a symposium on migmatite formation and migration, held at the International Geological Congress in Washington, D.C., in July.

The University of New Orleans employs **W. H. Busch** (M.S. 76) as an associate professor of geology.

The American University of Beirut employs **Mohamad R. Khawlie** (M.S. 72, Ph.D. 75) as associate professor and chair of the geology department. He teaches undergraduate courses in mineralogy and petrology, as well as various graduate courses. His research interests, reflected in his 30-plus publications on the topics, are mineral resource development (notably industrial minerals) and in land use and environmental protection.

He joined the faculty in 1978 after working for Lebanon's National Research Council on minerals exploration, freelancing as a geologist in Saudia Arabia, and working for Dames & Moore in London.

Prentice-Hall has published *Clastic Depositional Sequences: Processes of Evolution and Principles of Interpretation* by **Gordon S. Fraser** (B.S. 68, M.S. 70, Ph.D. 74).

Nancy Beresky (B.S. 78) works as a hydrologist for the State of Arizona, Department of Water Resources. She is involved in projects that determine groundwater conditions in all hydrologic basins in Arizona; that information is used in regulations concerning water use in the state and to assure the water supply over the next century.

She was promoted to hydrologist in November 1988 after 10 months as a water resource specialist, which involved field measurements of pumping water wells. She says, "You haven't really done fieldwork until you spend eight hours in 115° heat."

Beresky consulted as an independent petroleum geologist in the Illinois Basin until she moved to Tempe in 1986 to take graduate courses at Arizona State University.

Harold (Duke) Wilber (B.S. 71, M.S. 73) spent the summer as a seasonal park ranger/interpreter in Craters of the Moon National Monument. He is a secondary science teacher in Springfield (Illinois) School District 186. He is one of five finalists for district "Educator of the Year" for 1988.

Wilber and his wife, Rita, a teacher's aide, have two children: Matt, 15, and Sarah, 12. They have spent several summers traveling the West, from Wyoming to Nevada "where I did my undergrad thesis with Dr. Langenheim."

As consultant to the African Development Bank, **Citoyen Remy Tshibangu** (B.S. 73) reviews loan and investment proposals on development projects in Africa.

He earned an M.B.A. (75) and M.S. in finance (76) from UIUC and worked for a time for Conti-

nental Bank in Chicago. Since leaving the bank, he has consulted on various development projects in Africa; work-related travel took him all over Europe and north and west Africa, although he maintained a home base in Chicago with his wife and two children.

Last year he was required to relocate to the Ivory Coast for a few years. He writes, "My two boys enjoy the experience of studying overseas, and my wife practices 'real long-distance commuting' since her job as chief marketing officer keeps her in Chicago."

Richard J. Reeder (B.S. 75) is an associate professor in the Earth and Space Sciences Department at the State University of New York in Stony Brook.

Mike Kirby (B.S. 79) is one-half of Petrex Energy Inc., an oil and gas firm in Texas that does consulting and prospect generation in the Texas and Louisiana Gulf coasts. He helped begin the enterprise last fall.

After he was laid off from Enserch Exploration in 1986, Kirby taught geology at Alvin Community College (south of Houston) on a part-time basis for two years. He also brokered seismic data.

Earlier this year, **James W. Castle** (Ph.D. 78) accepted a position as senior staff geologist for Cabot Oil and Gas Corporation in Pittsburgh.

Daniel E. Lawson (M.S. 74, Ph.D. 77) is a research physical scientist, Geological Sciences Branch, in the U.S. Army Corps of Engineers, Cold Regions Research and Engineering Lab. He has received its "Sustained Superior Performance Award."

He also holds a concurrent adjunct professorship at Northern Illinois University and the University of Manchester in the United Kingdom.

The Geological Society of America has awarded its 1989 Young Scientist Award (Donath Medal) to **Mark P. Cloos** (B.S. 76), who teaches in the Department of Geological Sciences at the University of Texas, Austin.

James Luhr (B.S. 75) was featured in the November 1988 issue of *Illinois Alumni News* for his work with the volcano Colima in Mexico. Luhr, a geology professor at Washington University in St. Louis, was invited to a special meeting in Mexico in January 1988 to discuss with area residents and scientists the volcano's activity and how it may affect the people living near it.

Beryl A. (Horn) Hosack (B.S. 77) has returned to Computer Sciences Corporation (CSC) in Beltsville, Maryland, as senior computer scientist. Since June 1988 she has been directing a task under contract to NASA: developing a concept of operations for a ground data handling system to be used by the space station Freedom and other missions during that era.

She taught earth science for one year in rural Maryland, then joined CSC as an analyst in systems engineering, working on the LANDSAT image processing facility at Goddard Space Center. CSC selected her to obtain her M.S. (George Washington University 81) in information systems through a special corporate program.

It was there she met her husband, Glen, who is general manager of an ordance engineering company.

Hosack left CSC and worked for eight years at ORI Inc., also on space-related projects. Last year she accepted her current post at CSC.

She and her husband have a son, Aaron Jesse, three, and were expecting another child when she wrote last January. The family has traveled extensively in Colombia, Israel, and Italy; they hope to go to Tunisia next year.

EIGHTIES

Jack (John) Yarnold (B.S. 87) has been awarded a Department of Defense fellowship. He is working toward a graduate degree at the University of Arizona, Tucson.

David B. Bieler (Ph.D. 83) teaches geology, geography, and geophysics at Centenary College in Shreveport, Louisiana. He continues his work on stratigraphy, structure, and petrology of part of the eastern Blue Ridge in Alabama.

Bieler recently completed a manuscript with Dr. Lisa Kanter (Memphis State) concerning a tectonic regionalization of the stable continent regimes of the world with respect to their seismic phenomena.

Grant Olson (B.S. 81) worked for Geophysical Services Inc. in Denver for four months in 1982 before returning to UIUC, where he completed a B.S. in vet medicine (85) and a D.V.M. in 1987. He then had a mixed animal practice in Lan-

caster, Wisconsin, until July 1988.

Olson is now a mixed animal practitioner, "mostly dairy cows and dogs," in Winona, Minnesota. He says he eventually plans to "open a 'Pet Rock' veterinary clinic in order to utilize both degrees to the fullest."

Ventura, California, is now home for **Robert F. Babb** (Ph.D. 81), a geophysicist with Chevron Exploration and Production Services. He does assorted exploration and production activities, mostly with computers.

He worked for Gulf Oil in Houston and then in Midland, Texas, and was absorbed by Chevron when it took over Gulf.

Babb married **Laurie Hartline** (M.S. 81) in 1983.

Dwayne Martin Keagy (B.S. 84) has been working on a master's degree in hydrogeology at Eastern Kentucky University in Richmond. He also works for Merck, Sharpe, and Dohme in Barceloneta, Puerto Rico, in conjunction with Richmond-based Ewers Water Consultants. While in Puerto Rico, he is gathering material for his thesis.

Dartmouth College awarded a doctorate in geology to **Charles Benjamin Connor** (B.S. 82) in June 1988. He received a master's degree from Dartmouth in 1984.

U.S. Navy Ensign **Michael E. Lynch** (B.S. 88) is a diving officer in charge of supervising repair and salvage work and weapons handling on an ammunition ship. The ship's home port is Guam, where there is "all kinds of geology here!" His tour of duty should include time in southern Africa, India, Australia, China Seas, Korea, the Philippines, and Japan.

Jeff S. Rauh (B.S. 81) has spent four years as an officer in the U.S. Army Infantry. He has been pursuing an M.B.A. at Northern Illinois University and planned to receive his degree this past August.

Valla D. Jones (B.S. 84) married Dr. David A. Earl in December 1988. They are living in Bozeman, Montana.

Petrobras employs **Renato Taden Bertani** (M.S. 83, Ph.D. 84) as a district exploration manager in Natal, Brazil. He works on the petroleum exploration of the Potiguas Basin, a lower Cretaceous basin currently listed as the second oil producer of all Brazilian basins. He comments that it is still immature from the exploration point of view.

Natal is "a medium-size town located in the northeast corner of Brazil, full of beautiful beaches and very pleasant weather."

Lt. Keith Archbold (B.S. 84) is a U.S. Navy pilot, who as of September 1988 was detachment air operations officer deployed in the Persian Gulf.

After graduation from UIUC, he moved to Florida and worked as a facilities analyst for Americall Inc., doing network analysis and traffic engineering while working on his M.B.A. at night. To fulfill a "lifelong dream to fly," he went to aviation officer candidate school in Pensacola and was commissioned an ensign in the U.S. Navy in May 1985.

Archbold completed flight school in September 1986 and moved to San Diego for additional flight training. He was relocated to Jacksonville, Florida, which is now his home base. "I'm currently deployed in the Great Seasnake Lake, or Persian Gulf as you know it, and can't wait to get back home to my surfboard! I'm tired of people shooting at me."

Lee M. Hirsch (B.S. 81) received a Ph.D. from the University of California at Berkeley in 1987, with a dissertation focused "on the effects of high-temperature creep on electrical conduction in olivine for the purpose of better understanding high conductivity zones in tectonically active regions of the upper mantle."

He reports, "Since leaving Illinois I, happily, have done no field geology; although I still enjoy camping. My research for the past several years has involved laboratory studies of the physical properties of rocks and minerals." He also has been involved in electrical measurements on rock samples recovered from the Cajon Pass deep hole in California.

Hirsch currently is a postdoc at Los Alamos National Lab, working on computer modeling of point defects in minerals with the goal of better understanding conduction, diffusion, and solid-state deformation in the lower crust and mantle.

Heidi Hoffmann (B.S. 84) went to Oregon State University in 1984 to work on her master's degree; she was a research assistant in the soil science department there. Her thesis was titled "Petrographic Analysis of the Limestone-Dolomite Facies Change in the Middle Devonian Denay Limestone, Northern Antelope Range and

Fish Creek Range, Southern Eureka County, Nevada." She planned to defend her work just before last Christmas.

She also was "working (my paying job!) on soil mineralogy, soil solution chemistry, and age dating of marine terraces through use of soil data. I love my work and spend a lot of time hiking, skiing, and windsurfing. I live in the country and have a wonderful, productive garden and have been canning fruits, vegetables, making wine (Pinot Noir), and brewing beer."

John M. Fox (M.S. 87) is part of Ward's Natural Science Establishment, which publishes *Ward's Original Collector's Corner*, a mail-order catalog for geological specimens.

John L. Shepard (M.S. 80) is senior geologist for onshore exploration with Shell Western E & P Company in Houston. In the fall of 1988 he also recruited for Shell and visited the UIUC Geology Department.

Another alum working for Shell Western is **David C. Watso** (M.S. 88), who joined the Gulf Coast Division in July 1988 as a geologist. He lives in Houston.

Bruce E. Phillips (M.S. 86) is a hydrogeologist for the State of Illinois Bureau of Mines in Springfield.

David T. Heidlauf (M.S. 86) is a hydrogeologist with C. C. Mahlhotra & Associates in Chicago. He and **Lisa Harstad** (M.S. 86) were married in 1986. She has completed a teacher certification program at Northern Illinois University.

They also announce the birth of their daughter, Jillian Christine, on March 7, 1989.

After leaving UIUC, **Michelle Corlew** (B.S. 86) taught math and earth sciences in her hometown of Edwardsville, Illinois, for one year and took graduate-level math courses at Southern Illinois University.

For the past several years, she has been teaching earth science and other science courses at Waubonsie Valley High School in the Naperville/Aurora, Illinois, area. Corlew plans "to pursue a master's degree in paleontology in the near future, as well as work to establish environmental and geology classes at the high school."

The Denver-based geological consulting firm The Discovery Group has as its president **Robert Cluff** (doctoral student 78–83).

OBITUARIES

Robert "Bob" Everett Gernant (B.S. 63) of Mequon, Wisconsin, died in June 1988.

Dorothy Geneva (Quirke) Reedy (A.B. 42) died October 1, 1988, in Albuquerque following a short illness.

She was born September 13, 1920, and was raised in Urbana. She graduated from University of Illinois High School and the University of Illinois (major in geology and minor in English). She was a member of Gamma Phi Beta.

She married Robert Baldridge Reedy on June 8, 1946. He died April 22, 1980.

Mrs. Reedy worked as secretary to the Department of Geology and as a research assistant in paleontology at the University of Kentucky, 1942–46. After her marriage she worked at various firms around the country as an engineering draftsman, steel detailer, and senior statistical secretary.

After her husband's death, Mrs. Reedy moved to Albuquerque where she co-founded Diversified Art Associates, Inc., an artists' representative business. She also was co-owner of El-Dor Galleries and El-Dor Boutique in Old Town, Albuquerque.

She is survived by one sister, one brother, one daughter, one son, and three grandchildren.

Frederick E. Williams (M.S. 51) died in August 1988.

He retired from Morrison-Knudsen Company in 1984 and lived with his wife, Nancy, in Boise, Idaho.

Earlier in his career, he had worked for Allied Chemical Corporation, Consolidated Coal Company, Aluminum Company of America, and the Illinois State Geological Survey.

His widow reports that Mr. Williams's career was about evenly divided between coal exploration and fluospar exploration. He had worked in England, France, Morocco, Brazil, Argentina, Mexico, and Canada, as well as in the United States.

Please take a few moments to let us and your classmates know what you've been doing: promotions, publications, election to office, marriages, parenthood, moving, awards. We'd all like to hear from you!

Response date _____

Name _____

Address _____

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_____ Check here if this is a new address.

Degrees from Illinois (with year) _____

Degrees from other universities _____

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Present employer and brief job description _____

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Other news you would like to share _____

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Your comments on the alumni newsletter _____

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Deadline for February 1990 newsletter: November 17, 1989.

Place
Stamp
Here

Michelle Sanden Johlas
Editor, GeoSciences
Department of Geology
University of Illinois
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1301 W. Green Street
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. . .Late-breaking news. . .

Profs. Ralph Grim and Jack Hough die

As this issue of GeoSciences went to press, the Geology Department received word that Ralph E. Grim, professor emeritus, and Dr. Jack L. Hough, a former professor here, both had died.

Ralph E. Grim

Dr. Ralph E. Grim, professor emeritus in the Geology Department for 22 years, died August 19, 1989. He was 87 years old.

Ralph was born February 25, 1902, at Reading, Pennsylvania. He married Frances Brown in Urbana on January 1, 1964. She survives.

In 1931, Ralph received his Ph.D. from the State University of Iowa. He had earned a Ph.B. from Yale University in 1924.

He was an assistant professor at the University of Mississippi and an assistant state geologist in Mississippi from 1926 until 1930. In 1931, he became a petrographer for the Illinois State Geological Survey; in 1945 he became principal geologist at ISGS.

Ralph joined the Geology Department at UIUC in 1948 as a research professor. In 1967 he retired from the university, although he continued his work using the department as a base.

Ralph was a longtime and generous benefactor to the Geology Department. In 1976 he established the Ralph E. Grim Professorship in Geology. That endowed chair was filled in 1983 by Richard L. Hay. Ralph also began a fund for purchasing equipment for the department, most notably the scanning electron microscope and X-ray chemical analyzer (see the news article on page 9 in this issue).

Dr. Ralph E. Grim

In honor of his numerous contributions to the field of geology, to the department, and to the university, Ralph was awarded an honorary doctor of science degree by the University of Illinois in 1984.

Ralph's other awards included the Roebling Medal of the Mineralogical Society of America, which he received in 1974. He also received the first Distinguished Member Award from the Clay Mineral Society of America.

Additionally, in 1973 he was designated a Chevalier of the Ordre Nationale of the Republic of the Ivory Coast and received the Medal of the Ordre Nationale. Ralph had served as scientific advisor to the state corporation in the Ivory Coast that was administering UN funds granted to help that country develop its mineral resources.

The Clay Mineral Society of Spain created its Gold Medal especially to honor Ralph, and he received that in 1972.

Ralph was an honorary fellow of the National Academy of Science of India, the Ceramic Society of Brazil, and the Ceramic Society of France. He was a fellow of the Geological Society of America and of the Mineralogical Society of America; he served MSA both as vice president and president.

Ralph belonged to many professional organizations, including the American Ceramic Society, the Mineralogical Society of Great Britain, the British Ceramic Society, the Society of Economic Geologists, the American Association of Petroleum Geologists, Sigma Xi, the Society of Economic Paleontologists and Mineralogists, and the American Crystallographic Society.

He chaired the International Committee for the Study of Clays and was a member and first chairman of the U.S. National Research Council Committee on Clay Minerals.

Ralph was a delegate to several geological congresses and had lectured at research laboratories and universities in England, France, Australia, New Zealand, India, Japan, the Union of South Africa, Brazil, Argentina, Germany, Italy, and the U.S.S.R. His research also took him to Iran, Nicaragua, El Salvador, and South Vietnam.

In addition to his consulting work, Ralph wrote three textbooks and numerous articles for professional journals.

Memorial contributions may be made to the University of Illinois Foundation, the First

United Methodist Church of Champaign, or The Empty Tomb.

Jack L. Hough

Dr. Jack L. Hough, professor of geology at the University of Illinois from 1947 until 1964, died July 10, 1989, at the Borgess Nursing Home in Kalamazoo, Michigan. He was 80 years old.

He was born March 30, 1909, in Chicago. He is survived by his wife, Maxine Bow; a son, R. Anton Hough; a daughter, Barbara Locke; and four grandchildren.

Dr. Hough was a specialist in marine geology and one of the leading authorities on the glacial geology of the Great Lakes.

He received his B.S. in geology in 1932 from the University of Chicago. It was there he also earned his M.S. in 1934 and Ph.D. in 1940.

He began his professional employment with the U.S. Soil Conservation Service. After a brief stint with the Humble Oil Company, he worked for the U.S. Navy and the Woods Hole Oceanographic Institution, where he served as supervisor of oceanographic research and as an oceanographic advisor to submarine commanders during World War II.

In 1945 he worked for the Standard Oil Development Co. One year later, he was marine geologist and oceanographer on Admiral Richard Byrd's final Antarctic expedition.

In 1947, Dr. Hough joined the UI faculty as an associate professor in geology, then became a professor of geology.

During a leave of absence in 1954–55, he headed the Department of Geology and Geophysics at the Indian Institute of Technology in India.

In 1959 he received the Kirk Bryan Award from the Geological Society of America for his book, *The Geology of the Great Lakes.* From 1949 until 1961 he served as editor of the *Journal of Sedimentary Petrology.*

Dr. Hough joined the faculty of the University of Michigan in 1964 as professor of oceanography and geology. He was a research scientist in the Great Lakes Research Division.

He served as president of the Society of Economic Paleontologists and Mineralogists (SEPM) in 1966 and 1967. Western Michigan University awarded him an honorary doctorate in 1969; four years later he received honorary life membership in SEPM.

He retired from the Department of Meteorology and Oceanography (now Oceanic Sciences) at the University of Michigan with emeritus status in 1974.

After his retirement, Dr. Hough and his wife spent time building and then cruising their schooner, "Tondaleyo." They also traveled around the United States and Europe.

Department of Geology

GeoSciences

Alumni Newsletter Winter 1990

UNIVERSITY OF ILLINOIS

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GeoSciences

Cover: Dr. Richard L. Hay, Ralph E. Grim Professor of Geology at UIUC, is well-known for his work at Olduvai Gorge, Tanzania. See story on page 10
Photo by Jessie J. Knox

GeoSciences is the Alumni newsletter for the Department of Geology, University of Illinois at Urbana-Champaign. It is published in September and February of each academic year.

WINTER 1990

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Faculty

Stephen P. Altaner, assistant professor
David E. Anderson, professor
Thomas F. Anderson, professor/associate dean, LAS
Jay Bass, associate professor
Cameron Begg, research microprobe analyst
Craig M. Bethke, associate professor
Daniel B. Blake, professor
Chu-Yung Chen, assistant professor
Wang-Ping Chen, associate professor
Richard L. Hay, Ralph E. Grim Professor
Albert T. Hsui, associate professor
W. Hilton Johnson, professor
R. James Kirkpatrick, professor/department head
George deVries Klein, professor
Ralph L. Langenheim Jr., professor
C. John Mann, professor
Stephen Marshak, associate professor
Peter A. Michalove, assistant to dept. head
Alberto S. Nieto, professor
Charles Norris, research associate
Lois M. Pausch, acting librarian
Philip A. Sandberg, professor
Norma Vergo, research associate

Adjunct/Emeritus Faculty

Albert V. Carozzi, emeritus
Keros Cartwright, adjunct/ISGS
Carleton A. Chapman, emeritus
J. James Eidel, adjunct/ISGS
Leon R. Follmer, adjunct/ISGS
Donald L. Graf, emeritus
Arthur F. Hagner, emeritus
Donald M. Henderson, emeritus
Morris W. Leighton, adjunct/ISGS
Robert Reynolds, adjunct/professor
Harold W. Scott, emeritus

Nonacademic Staff

LuAnn P. Cliff-Crooks, clerk typist III
Jean E. Daly, chief clerk
Murle Edwards, chief clerk
Barbara Elmore, transcribing secretary
Jessie Knox, cartographer
Eddie Lane, electronics engineering assistant
Patricia Lane, administrative secretary
Mary Ann Quinn, library clerk II
Alice Reed, library clerk II
Gwyn Truitt, clerk typist III
Diana L. Walter, library technical assistant II

Graduate Students

Istvan Barany Jr., TA
David Breedon, TA
Ten-Hung Chu, TA
Xian-Dong Cong, RA
Tom Corbet, RA
James A. Cremeens, TA
Brandon Curry, ISGS
Eric Daniels, RA
Mary Ann Glennon, RA
Dave Grimley, TA
Junpeng Guo, TA
Steve Hageman, RA
Daniel Hayba
Eric Holdener, TA
Sharon Horstman, TA
Hue-Hwa Hwang
Honn Kao, TA
Douglas J. Kelly, assistant professional scientist, ISWS
Joanne Kluessendorf, museum RA, TA
Jennifer Kupperman, USGS
Rob Lander, RA
Kurt Larson, fellow
Ming Kuo Lee, RA
Wan Bing Li, RA
Jay Matthews, RA
Patrick O'Boyle
Hans Papenguth
Brian Phillips, RA
Christopher Roemmele, TA
Fred Siewers, RA
Steven Sroka, TA
Nita Tolia, TA
Kim Weborg-Benson, TA
M. Scott Wilkerson, fellow
Yuehui Xiao, RA

ISGS = Illinois State Geological Survey
ISWS = Illinois State Water Survey
RA = research assistant
TA = teaching assistant
USGS = United States Geological Survey

Letter from the Head

Greetings from a cold and snowy Champaign–Urbana, and as I write this, "Happy New Year!" We have been very pleased with the positive response we have received from you all about *GeoSciences*. We will continually strive to improve it. Please send us your ideas and, especially, news about what you have been doing.

This past semester has continued to be a period of rapid change and excitement for the department. We have implemented the new undergrad and graduate requirements, continued with remodeling design, worked to finalize new general education courses, and searched for a new faculty member in geophysics.

Major events included retirement parties for Don Henderson and Albert Carozzi, the alumni get-together in Boulder, the alumni party at Homecoming, and the annual alumni cocktail party at GSA. All were most enjoyable, and it has been a pleasure for me to meet old friends and make new acquaintances. Please make plans now to attend next year's cocktail party at GSA and Homecoming in Champaign–Urbana.

As most of you know, Alan Scott has agreed to be the new chair of the GeoThrust Committee. He will do an excellent job, and I want to thank him for agreeing to take it on. I also want to thank Mike Wahl for the work he has done during his time as chair. Without him, the committee would not have got off the ground. You will hear more from the GeoThrust Committee in the future.

We also want to announce that Dr. Joel Massmann will join our faculty next summer. Joel is a hydrogeologist. He received his Ph.D. from the University of British Columbia in 1987 and has been teaching at Michigan Tech since then. In 1988 he received the Presidential Young Investigator Award, and his arrival makes our hydrogeology program one of the strongest in the country. We are pleased to welcome him and his wife Rees Robinson to the community.

Finally, I want to again encourage all of you to do whatever you can to help increase the number of young people interested in the earth sciences and in science in general. There is no doubt that the number of undergraduates interested in a science career has dropped significantly over the last few years and that the undergraduate population's overall background in science is poorer. The implications of this trend for future national economic health have been much discussed, and I think are ominous. The sociologists can argue all they want about why this is, but in my view it is up to us in the sciences to do something about it.

Those of us directly involved in education have a clear responsibility, and one of my priorities is to get the department more involved with students before they reach us. There are, however, things that all of us can do both individually and through our employers.

Individually, we can get involved with youth groups of all types and introduce young people to science (geology is a natural—kids love to get outside and do things) and show them that science is not always something done by nerds cooped up in a lab.

Employers can do such things as develop intern programs, have special supportive relationships with individual schools, and allow employees time to be involved in these programs. Many companies are developing a wide variety of programs of this sort. I encourage you to become involved in any way you can!

Jim Kirkpatrick

Departmental News

Computer lab improved with new SPARCstations

The computer laboratory currently housed in Room 106 of the Natural History Building is being upgraded, and eventually will be moved to an interior room in the basement remodeled specifically to house such equipment.

According to Peter A. Michalove, assistant to the head, the lab currently has four Apple Macintosh computers, two laser printers, and one "rough-draft quality" printer.

In addition, the department has just acquired four Sun SPARCstations, which Michalove says "are much, much more powerful than personal computers." Department head R. James Kirkpatrick describes the Sun configurations as "very high-end personal work-stations."

Both students and faculty may use the computer lab for teaching and research, and Michalove points out that "they're getting a lot of use; people are always working on them."

Kirkpatrick also said that special geological applications for use on the Macintosh II are being developed via Mathematica software.

The department continues to pursue plans to develop a complete network of computers within the department.

Funding for the computer lab improvements comes from departmental resources and from the College of Liberal Arts and Sciences.

Homecoming '89 a success

Forty-two people attended the Homecoming cocktail party held at the home of department head R. James Kirkpatrick and his wife Carol.

Two special guests were Grace and Carl (B.S. 31) Grub, who was the oldest graduate present.

Alumni traveled from as far away as Camp Hill, Pennsylvania, and Red Lodge, Montana, to attend Homecoming 1989 activities.

Department head R. James Kirkpatrick (right) welcomes alumni to the Homecoming party, held at his home.

GeoThrust names new leader

Alan Scott, an independent oil consultant in Boulder, Colorado, has been named new chair of GeoThrust, the departmental fundraising program.

Scott assumed the position early in November, after former chair Michael Wahl stepped down earlier in the year.

According to department head R. James Kirkpatrick, the GeoThrust committee structure is being reexamined and may be reorganized in the future.

Letters recently were sent to alumni and friends who still had pledge commitments to meet. A follow-up mailing to all alumni was sent in December.

Editor seeks your help with magazine

As editor of *GeoSciences*, it is my privilege to meet many different people associated with the department. Some of you I meet in person, others through your letters and reply forms.

I want to express a hearty "Thanks!" to all who returned the reply forms from the Fall 1989 issue; the news you sent in begins on page 15. It is interesting to read about the many different places you live and work, and the varying avenues you have traveled since leaving the University of Illinois.

Some of you passed along information about other alumni who had been "lost" to us and our computer files. I encourage all of you to do the same, even if you think someone else might send that same information. We have now "recovered" 13 alumni, and none of the information we received was duplicated. Your efforts do make a difference!

I sincerely believe that *GeoSciences*, as the department's alumni publication, serves an important role in keeping the lines of communication open between the folks still in the department and those who have gone on to other things. To keep that street a two-way one, I'm asking your help with several things.

Photographs. If you have good photographs—preferably black-and-white, but color ones are OK, too—of what you've been up to, either at work or in your more unusual leisure-time activities, please send them to me. We would like to include more photos of our alumni, but we need your help to do that!

All photos will be returned to you in good condition, unless you say they can be kept on file here in the department.

Comments and suggestions. As you know, the alumni newsletter has undergone a transformation this past academic year, and I'm anxious for your feedback. Many of you made favorable comments on your reply forms, and your appreciation is heartening.

Please feel free to make general comments and suggestions. These can take the form of more "personal" comments to me or to the department head, or they can be letters to the editor, which would be published in the following issue.

Letters to the editor allow you to comment on the newsletter, the Department of Geology, the University of Illinois, or topics of professional interest. I do ask that you limit letters to 300 words. All letters must be signed and are subject to editing for conciseness and clarity.

Story ideas. If you know a person, project, or location that you think other UIUC alumni would enjoy reading about, let me know. A team of 1,200 newsgatherers is bound to have more ideas than one or two individuals. Also, if you or someone you know has received some sort of honor, pass that information along. You'd be surprised at how many of you are too modest to toot your own horn!

In this issue of the newsletter, we continue to fine-tune some of the design and content changes. I, along with Jim, Peter, Jessie, Pat, and the others involved in preparing this edition, hope you find it entertaining and informative. The next regular issue of *GeoSciences* will appear early next fall.

Enjoy!

Michelle Sanden Johlas

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Faculty, one student honored

Jennifer B. Kupperman, a graduate student in geology, has been awarded a research grant by the North-Central Section of GSA. Her research focuses on "Short-term Tectonic Subsidence Analysis of Pennsylvanian Cyclothems in a Transect from a Platform to a Foreland Basin." The section awarded two research grants this year.

Dr. Chu-Yung Chen and **Dr. Wang-Ping Chen** announce the birth of their son Andrew Ian on August 4, 1989. Andrew joins sister May-Anne, six years old.

Dr. George White, head of the UIUC Geology Department from 1947 until 1965 and geology professor emeritus from 1971 until the time of his death in 1985, has posthumously been awarded the Mather Medal by the Ohio Geological Survey. Earlier this fall, Mildred White received the plaque indicating the award, named after William Mather, first head of Ohio's Survey.

Phillip Celnar, one of the members who selected Dr. George White for the award, presents the Mather Medal plaque to White's widow, Mildred,in her Champaign home. Behind them is the map Dr. White prepared shortly before his death.

The award, "presented by the Division of Geological Survey of the Ohio Department of Natural Resources," cites Dr. White's "outstanding contributions to the knowledge of the geology of the State of Ohio."

Dr. White was fifth head of the Ohio Survey, working there from 1946–47. He and his wife came to the University of Illinois in 1947. He continued to work summers at the Ohio Survey during his tenure at UIUC, and according to Mrs. White, he had 50 years service with the survey before he died.

That work was represented in the last map Dr. White prepared, a four-foot square map of some 15 counties in Ohio, published in 1982.

Dr. Philip A. Sandberg spent last semester at the University of Leiden, The Netherlands. Working in the Department of Biochemistry, he was conducting immunological-biochemical studies dealing with the molecular phylogeny of fossil vertebrates, and with identification of organisms contributing fine grained carbonate sediments.

Geology and Life Sciences trade

Space exchange part of remodeling

Remodeling the space used by the Department of Geology continues on track, with results of the summer's work already evident.

During the summer of 1989, two instructional labs were remodeled and completely refurbished. Department head R. James Kirkpatrick says, "Everybody I've talked to says teaching in them or taking classes in them is so much better than in the old labs. I'm very pleased with the results."

Meanwhile, plans are being finalized for the remodeling and refurbishing of other selected faculty labs. Construction times have not yet been set, but Peter A. Michalove, assistant to the head, says work will begin sometime this spring.

In another significant development, the Department of Geology negotiated a space exchange with the Department of Life Sciences, effective at the end of this spring semester. The trade provides four labs and two good-sized offices to the Geology Department.

Michalove says this will allow the department to fully occupy the basement and first floor of the Natural History Building, while life sciences will be on the third and fourth floors. Previously, space was shared by both departments on the same floors.

Klein receives Fulbright

Dr. George deVries Klein, professor of geology at UIUC, has just completed a semester as a Senior Fulbright Research Fellow at the Vrije Universiteit in Amsterdam, The Netherlands.

Dr. Klein, who joined the UI faculty in 1970, spent 17 weeks studying European Pennsylvanian cyclothems. His research is aimed at determining what magnitude of sealevel change, which forms cyclothems, is caused by changing plate stress, compared with climatic causes.

Cratonic basins and Pennsylvanian cyclothems have been focal points for much of Dr. Klein's recent research. He explains that cyclothems are cyclically recurring rocks that show alternating marine and nonmarine sediments. The term originally was coined from rocks of Pennsylvanian age found in Illinois.

Dr. Klein has been working with Professor Sierd Cloetingh of the division of tectonics at Vrije Universiteit since the summer of 1988. Professor Cloetingh has developed computer modeling programs to provide methods of analyzing tectonic stress change from stratigraphic data.

Dr. Klein points out, "If this method works on Pennsylvanian cyclothems, then we can use it with rocks of any age that show cyclic patterns."

His research in The Netherlands already has "established that cyclic change is definitely correlated in part to flexural deformation." The cyclothems of North America and Europe are similar, Dr. Klein says.

Writing in *GeoScoop*, a departmental magazine at Vrije Universiteit, Dr. Klein

Dr. George deVries Klein

explained his current findings this way:

"It is the linkage of foreland and cratonic basins which explained one of the older controversies of geology, the origin of Pennsylvanian cyclothems. In North America, these show a lateral facies change ranging from marine-dominated limestone and shale cycles in the continental interior platform (Kansas-type), to mixed marine and nonmarine sandstones, shale, coal, and limestone in the Illinois cratonic basin (Illinois-type), and nonmarine-dominated sandstones, coal, shale, and accessory limestone in the Appalachian foreland basin (Appalachian-type). A similar regional distribution appears to characterize European cylcothems inasmuch as those of the southeast Netherlands, Belgium, and western Germany are identical to Appalachian-type cyclothems, and those of the Russian platform are more like Kansas-type cyclothems.

"This facies distribution can be correlated to lateral decreasing magnitude of flexural intensity as one traces these rocks away from the Appalachian foreland basin. Kansas-type cyclothems also appear, according to some, to be caused by eustatic sealevel change driven by Milankovitch orbital parameters, but recent changes in the Pennsylvanian time scale, and recently published work showing that the periodicity of Milankovitch orbital parameters decreases with increasing geological age, places this finding in doubt. Instead it is far-field tectonic effects in the form of flexural stress that dominate the facies patterns of cylcothems, and climate-driven (glacial) eustasy appears to be subordinate."

Paper accepted

Early during his sabbatical Dr. Klein also wrote a paper, "Pennsylvanian Time Scales and Cycle Periods," which has been accepted for publication in *Geology*.

Dr. Klein briefly returned to the United States partway through his leave to teach a short course prior to the national meeting of the Geological Society of America.

Fulbright Fellowships are funded by the Council for International Exchange of Scholars and the U.S. Information Agency, as well as by the government of the host country. Thus, Fulbright Fellows are considered part of a "people-to-people ambassador" program.

Profs retire with style

Two longtime UIUC geology professors who retired this past fall were feted in style at parties in their honor.

Henderson serenaded

Dr. Donald M. Henderson was honored October 21 with a recital and dinner at the Krannert Art Museum.

Approximately 80 people, in addition to Henderson's wife and five children, attended the event, which featured music by the UI's School of Music Graduate String Quartet.

In addition to traditional music by the old masters, Henderson was treated to the premiere of an original composition written for him by Dr. Peter Michalove, assistant to the head of the Department of Geology.

Michalove says that when Henderson learned of the plan to have a string quartet at the party, he said, "I don't want to hear any of those old warhorses that we've all heard 100 times before. I want something new."

Dr. Donald M. Henderson enjoys the festivities at his retirement party.

In addition, the "C–U Rock Opera Company" performed "Hendy on the Glide Plane" to the tune of "Charlie on the MTA." Performers were Michalove, Dr. Jay Bass, Dr. Stephen Altaner, Dr. Duane Moore, Dr. R. James Kirkpatrick, accompanied by Brian Phillips on guitar.

Dr. Winton Solberg, professor of history at UIUC and longtime friend of Henderson, spoke, as did Dr. Gil Haight, emeritus professor of chemistry.

Alberto Benavides, a friend from Henderson's graduate school days, traveled from Peru to attend the party. He also said a few words, and noted that he hadn't seen Henderson since 1957.

The entire event was coordinated by Dr. Duane Moore of the Illinois State Geological Survey, who also handled gathering the testimonial letters.

Donations received for Henderson's retirement gift were pooled so he could purchase a piece of computer hardware.

Carozzi feted at GSA

A more traditional party was held to honor Dr. Albert V. Carozzi during the 1989 annual meeting of GSA in St. Louis.

Coordinated by former student Michael R. Owen, the November 6 event featured a sit-down dinner and speeches by other former students. Forty-four people attended the dinner, which was videotaped for Carozzi.

Carozzi himself spoke at the event, and listed all 34 of the doctoral students he had supervised during his tenure at UIUC.

More than $2,000 was raised from alumni to buy geology books—especially those concerned with the history of the discipline—for the departmental library. These books will be given in honor of Carozzi and his work.

Just prior to Carozzi's retirement dinner, the annual Alumni Reception was held. Some 100 people attended the reception. According to Michalove, approximately 60 UIUC alumni attended the annual GSA meeting in St. Louis.

New recruitment tool sent out

This fall, the Department of Geology sent out 400 brochures outlining its areas of graduate study and profiling the research interests of its faculty members to alumni who are faculty members at other colleges and universities.

The brochure was a straightforward effort this year, but department head R. James Kirkpatrick hopes to make it a more substantial and "slicker" publication in the future.

The brochure was accompanied by a letter asking that these UIUC alumni encourage their current students to take a look at all the UIUC Geology Department can offer for graduate study.

If you would like a copy of this brochure, please contact Pat Lane at (217) 333-3542.

Alumni gather in Boulder

Although the September 16 football game between the Fighting Illini and the Colorado Buffaloes didn't turn out the way John Mackovic wished, the Geology Department was quite pleased with its turnout for the day.

Prior to the game, the department held an alumni breakfast reception at the Clarion Harvest House in Boulder. About 40 people attended the party, which pleased department head R. James Kirkpatrick.

Kirkpatrick discussed plans and goals for the department, then opened the floor for a question-and-answer session.

Peter A. Michalove, assistant to the head, was in Colorado, and he said there "was a lot of thoughtful conversation about where the department is going. They were asking perceptive questions and making good comments."

About 40 people attended the Department of Geology's alumni breakfast in Boulder, Colorado, before the September 16 football game.

Given the success of this first effort, Michalove said similar events may be planned for the future.

Department awards 12 degrees

The Department of Geology granted seven degrees in the last half of 1989.

In August, **Laurence Charles Smith** received a bachelor of science. Students who earned master's degrees in August were **Mark L. Kerasotes,** "Woodfordian Stratigraphy and Glacial Geology in the Upper Illinois Valley Region, North Central Illinois"; and **Gang Lu,** "Paleomagnetic Consequences of Late Paleozoic Tectonic Diagenesis in Carbonate Strata of the Midcontinent, United States of America."

Two students earned their master's degrees in October: **Hong Wang,** "Elasticity of Silicate Glasses"; and **Thomas J. Zychinski,** "Determining the Mass and Location of Subsurface Reef Structures Using Borehole Gravimetry."

Loren Bruce Railsback received his Ph.D. in October for "Ordovician Paleoceanography: Stable Isotope and C-S-Fe Evidence from the Caradocian Trenton Group, Mohawk Valley, New York." Also earning a doctorate then was **Charles A. Weiss Jr.,** whose thesis focused on "The Structural Environments of Cations Adsorbed onto Clays: A ^{133}Cs MAS NMR Spectroscopic Study."

One student received a master's degree in January 1990: **Ming-Kuo Lee,** for "Quantitative Models of the Paleohydrology of the Denver Basin and Sediment Diagenesis in the Lyons Sandstone."

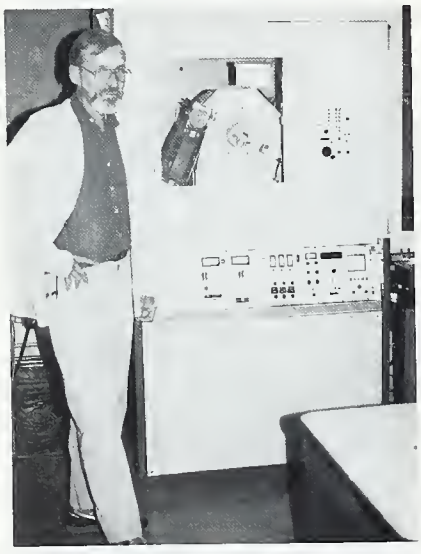
Four students completed their doctorates last month: **Linda M. Bonnell,** "Quantity and Isotopic Composition of Reduced Sulfur in Cretaceous Organic-Rich Shales"; **Michael E. Duffin,** "Potassic Alteration of Cambrian-Ordovician Sandstones and PreCambrian Basement Rocks of the North American Midcontinent"; **Edwin R. Hajic,** "Late Pleistocene and Halocene Landscape Evolution, Depositional Subsystems, and Stratigraphy in the Lower Illinois River Valley and Adjacent Central Mississippi River Valley"; and **Timothy H. Larson,** "Interpretation of Shallow Geothermal Surveys."

Profile: Richard L. Hay

Hay helps to establish environments of human evolution in Africa

The office is lined with books, journals, and rock samples, not unlike the offices of other geology professors. In one corner sits a good-sized microscope—"my third and essential eye"—and nearby is a computer. The casually dressed 63-year-old strokes his salt-and-pepper beard, then adjusts his glasses. "I had my first rock collection at the age of four or five," says Dr. Richard L. Hay. "Most kids grow out of it, but I didn't, and look where it's taken me."

Among the places geology has taken Hay, the Ralph E. Grim Professor of Geology at UIUC, is Olduvai Gorge in Tanzania. It was there that Hay made a name for himself with his work on the paleoenvironments of early humans.



This X-ray diffractometer is an important tool in Richard Hay's work.

Hay's involvement began as a result of the K–Ar testing that dated tool-making early humans at Olduvai Gorge 1.75 million years ago, a date published in 1961 by two of his then-colleagues at the University of California at Berkeley. The scientific world was "astounded" at this great antiquity for tool-making hominids, and the date was criticized by some because the stratigraphy of Bed I, which contains the hominids, had not been determined.

Hay was invited to work out that stratigraphy in 1962. The geology of Olduvai Gorge proved "irresistible," and Hay stayed on as resident geologist at the camp of Louis and Mary Leakey until 1974. In 1976 Hay published his final synthesis: *Geology of the Olduvai Gorge: A Study of Sedimentation in a Semiarid Basin.*

From 1975 through 1982, Hay was a member of Mary Leakey's expeditions to the Pliocene site of Laetoli, about 20 miles from Olduvai Gorge. Laetoli contains deposits with hominid remains having an age of 3.5 to 3.8 million years. Hay says a highlight of the expeditions was discovery of volcanic ash layers with abundant footprints, including those of early hominids. These footprints show that the hominids walked upright, with a fully human gait, despite many primitive features.

"Preadapted" for Olduvai

Hay's earlier work on sediments of Searles Lake proved a key to understanding the nature of the Bed I lake and paleoclimate at Olduvai. Prior to going to Olduvai, Hay had found that zeolites and K-feldspar were formed in sediments of Searles Lake, a highly saline and alkaline playa-lake in the arid region of California to the east of the Sierra Nevada.

Lake deposits at Olduvai Gorge contain these same minerals, pointing to a saline, alkaline lake in a closed basin with a semiarid or arid paleoclimate. The hominids (*Homo habilis* and *Australopithecus boisei*) occupied lake-margin terrain in the vicinity of rivers from the volcanic highlands.

The hominid remains at Laetoli, by contrast, are in sediments deposited in a semiarid

grassland savannah, distant from lakes and lacking major rivers. Hay says the hominid footprints and those of migratory animals were made in ash layers deposited during the rainy season, suggesting that the hominids, like the associated migratory animals, occupied the Laetoli area only during the rainy season.

Helping new generation

Hay returned to Olduvai Gorge last summer. "Mary Leakey retired," he explains, "so I went to help a new team of archeologists get started on the stratigraphy there."

Among those "newcomers" was Robert Blumenschine from Rutgers University. Blumenschine has developed a method called "landscape archeology," which involves sampling a former land surface over a wide area, in an attempt to put archaeology in the context of a landscape.

This work complements that of Mary Leakey, who studied major concentrations of stone tools and bones, representing campsites and butchery sites. Hay says that landscape archeology will give a more complete picture of the scope and intensity of early human activities.

On this last trip, Hay also assisted geologists from the Berkeley Geochronology Center in sampling ash layers from different stratigraphic levels. These samples will be dated by the single-crystal $^{40}Ar/^{39}Ar$ laser fusion method. Because single crystals are dated, detrital crystals can be readily detected, unlike the potassium–argon method used previously. Thus, Hay says, more accurate dates can be obtained by this newer method.

Hay emphasizes that he's "*still* learning things about Olduvai," and his trips back to Africa now allow him "to correct

On Hay's trip to Olduvai Gorge this past summer, Tanzanian Paul Manega helped provide some radiometric dating of the strata in the Gorge and nearby areas. Manega is a doctoral candidate. The two are standing at the Gorge's edge.

my own errors in the original work."

He still seems a bit surprised at the praise given him for his work at Olduvai, but he also is proud of his contributions to understanding the "geology of early man."

"I really had no idea until the end of 10 years' work what it would turn into," Hay says. "Others think it was a fine job, and I get a great feeling of satisfaction from that."

Evidence of the importance of Hay's work is easy to find. In 1978 he received the Kirk Bryan Award from the Geological Society of America for his monograph on Olduvai Gorge. That same year he also received the Arnold Guyot Award from the National Geographic Society for his "geological research in East Africa."

Dr. Hay and one of his graduate students, Rob Lander, take a few minutes to pose for a photo in one of the department labs. Lander and Hay have been awarded a grant by the American Chemical Society to study White River Group sediments.

"Couldn't refuse" U of I

Born in Goshen, Indiana, Hay later earned both a bachelor's and master's in geology from Northwestern University. He earned his Ph.D. from Princeton University in 1952.

While at Princeton, he became acquainted with Hisashi Kuno, a post-doc. Hay says, "I owe a lot to Kuno, who showed me the significance of recognizing former minerals by their shape and association, after they've been replaced by something else. This is now a routine part of my petrographic work."

Upon finishing his doctorate, Hay was drafted into the U.S. Army, where he worked in the Corps of Engineers on "terrain intelligence studies."

After discharge from the army in 1954, he joined the U.S. Geological Survey, where he worked on the geologic mapping of Truk, a former Japanese naval base, in the Caroline Islands of the southwest Pacific.

Baton Rouge became home while Hay was an assistant professor of geology at Louisiana State University, from 1955 to 1957. From there he went on to Cal–Berkeley, where he spent the next 26 years.

Hay joined the University of Illinois faculty in 1983 as the first Ralph E. Grim Professor of Geology.

"Even after a quarter-century at Berkeley, this was an offer I couldn't refuse. An endowed chair at this institution! This move also gave me the opportunity to further my research in clay mineralogy. Ralph Grim had established this department as a center of clay mineral research.

"Shortly before Ralph's death," Hay adds, "he gave the department a state-of-the-art scanning electron microscope, which maintains the excellence of the department in clay mineral research."

New research under way

Hay's main body of work may be behind him, but he has undertaken several new topics of research since coming to Illinois.

One is related to Olduvai: now he is studying the clay mineralogy of the Gorge. "I want to further my understanding of chemical processes in sediments of this ancient desert lake," he says.

Another project, undertaken with Dr. Stephen Altaner of UIUC, is the study of sediments in the Creede Caldera in Colorado. This is a volcano whose top has collapsed, and the caldera is filled with tuffs and tuffaceous sediments. The two men are studying the interplay of saline, alkaline lakewater and hydrothermal solutions in altering the sediments to zeolites, clay minerals, and K-feldspar.

Hay, who likes to fish, points out that "one particular benefit of this study is the pro

ductive trout stream that runs through the caldera."

Hay is also studying mineral reactions in Cambro-Ordovician rocks of the Midcontinent. He is particularly interested in the K-feldspar and illite formed at low temperatures, and is exploring their possible connection to lead–zinc deposits in the Upper Mississippi Valley. Mike Duffin, a student of Hay's, recently completed a doctoral dissertation on this subject.

Another project is with doctoral candidate Rob Lander. The two have been awarded a grant by the American Chemical Society to study the zeolites and clays of the White River Group. (See related article, next page.) Jay Matthews, a doctoral candidate jointly supervised by Hay and Altaner, is studying the origin and transformation of clay minerals in saline, alkaline lakes of Oregon.

Lover of life

In addition to golfing and fishing, Hay enjoys hunting edible mushrooms, something he's been doing since 1975.

While living in California, his neighbors introduced him to identifying mushrooms and harvesting the edible ones. It's something he continues in Illinois.

Hay's "third eye" —a microscope—sits in a corner of his office.

Hay says he and two other "mushroom addicts" in Urbana–Champaign harvest eight to ten kinds of mushrooms in nearby woods. He was lucky last fall, he says, because a stump in his neighborhood provided a continuous supply of oyster mushrooms. Hay also has started meadow mushrooms in his own yard.

Hay says he likes to interact with his colleagues and students, and this shared attitude is one of the things that makes the Department of Geology an attractive place to work.

"It's an exciting environment, one that's moving forward under its new leadership," Hay says. He also cites the quality and variety of research as "invigorating" and lauds the contributions of younger faculty, "who are so exciting to be with."

Hay's colleagues characterize him as an original thinker and keen observer, with the persistence to see a complex problem to the end. These qualities have led to his success in working out the environments of early humans in Olduvai Gorge and Laetoli.

As Mary Leakey says in her foreward to Hay's seminal volume: "The following lines from Emerson truly reflect Richard Hay's contribution: 'What is originality? It is being one's self and reporting accurately what we see.'"

Lander studies White River Group

Rob Lander, a geology student at UIUC one year away from completing his Ph.D., is a student Dr. Richard Hay describes as a "ball of fire."

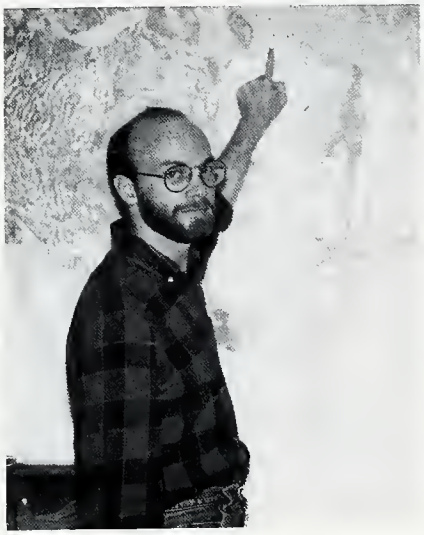
Together, Lander and Hay have been awarded a grant from the American Chemical Society for "A Model for Zeolitic Alteration of White River Group Sediments." This work closely parallels Lander's dissertation focus: "Pedogenic and Burial Diagenetic Alteration of White River Group Sediments."

Lander says he is "trying to understand what's controlling mineralogical changes in these rocks," especially the textural and geochemical changes.

The White River Group, centered in Wyoming and fanning out over six states, came to Lander's attention while he was a geology student at Knox College in Galesburg, Illinois. He and a Knox professor—a vertebrate paleontologist—did fieldwork in the area, concentrating on paleomagnetic stratigraphy and mammalian fossils. While researching an undergraduate honors thesis, Lander also learned that zeolites were present in those sediments.

When the geology program at Knox was cut, Lander turned to the University of Illinois and finished his B.A. under Hay's supervision. (Still, Lander's 1986 bachelor's degree was granted from Knox.) He knew of Hay's work with zeolites and said it "seemed an obvious choice."

Lander has spent four summers doing fieldwork in the White River area, and has collected some 1,500 samples from 30 locales. He now is ready to model the past flow and chemical evolution of groundwaters in these sediments, using the facilities of the department's Laboratory for Supercomputing in Hydrogeology. He hopes to use these results to construct a predictive model for alteration of volcanic glass to smectite, silica, and zeolite.



Doctoral student Rob Lander points out the area of his work with White River Group sediments.

In addition to his work on silicate diagenesis, Lander has been studying the stable isotopic composition of calcite in White River Group sediments. The calcite isotopic signatures record climatic conditions during the deposition of these rocks, and also document the diagenetic conditions that led to the emplacement of petroleum reservoirs and uranium deposits.

In November, Lander presented a paper on the climatic work at GSA's annual meeting.

Lander says he's had two surprises in his work so far: "The isotopic signatures indicate that there was a large mountain range west of the study area. They also show that there was a larger proportion of rainfall from the Gulf Coast in the Great Plains, compared to the present day, indicating that atmospheric circulation was much different in the mid-Tertiary."

Lander, who has worked two summers for ARCO Oil and Gas on sediments near Santa Barbara, California, and from offshore China, hopes to secure a research-oriented academic position when he finishes his doctorate. He says he also will consider working in a research group in a government agency or in the oil industry.

Asked to name his mentors, Lander quickly lists three: Lawrence DeMott, Duane Moore, and Richard Hay. DeMott, who has died, was Lander's "great teacher" at Knox, the one who really sparked Lander's interest in geology. Duane Moore, also a professor at Knox who now is with the Illinois State Geological Survey, got Lander immersed in research projects very early on.

Hay has exerted a "remarkable degree of influence" on him, Lander says. "One of the most unique things about Richard is his uncanny ability to get to the substance of the problem. More than anything else, I hope to emulate his clear thinking and ability to make the essential observations."

Lander characterizes Hay as "one of the best field geologists I've ever been with," and says that example has been important in his own fieldwork.

This "up-and-coming geologist," as Hay puts it, has a final compliment for his mentor: "Richard has contributed more important geologic works over a wider range than anyone else I know of."

Alumni News

The heart of any alumni newsletter is, of course, information about the alumni themselves. This material is gathered primarily from the reply forms and correspondence you send to the department, although some tidbits are provided by faculty and staff who have seen or heard from you. The news in this issue is the latest information we have about these individuals.

Take time to complete and return the reply form at the end of this section—your news is important to us!

For your convenience, this section has been broken down into decades. If an individual was affiliated with the Department of Geology from part of one decade into another, he or she will be listed according to the date of the last degree granted from UIUC. Please note that items do not appear in alphabetical order within each decade.

Adolf Pabst marks 90th birthday

Adolf Pabst (A.B. 25) celebrated his 90th birthday this past November 30.

A birthday celebration was planned by and held at the University of California–Berkeley, where Pabst had been a faculty member before his retirement. UIUC's Richard Hay attended the party. Donald Henderson, who knew Pabst as a graduate student, sent a space-group puzzle and a computer-drawn crystal of pabstite, the tin analogue of benitoite.

James Schroeder, dean of the College of Liberal Arts and Sciences at UIUC, sent congratulations and best wishes from the University, and pictures of the Urbana–Champaign campus. Pabst is a life member of the UI Alumni Association.

When responding to the invitation to attend last fall's Homecoming cocktail party, Pabst wrote:

"Though I have not been back to Champaign–Urbana since my graduation in 1925, I still look back to my years at [the] U of I as the best of my long life, and I am still in touch with two of my fellow students from those times.

"Over the years I have visited or been a faculty member at various universities in the U.S.A., Canada, England, Norway, Germany, and Austria, but this extensive experience has only served to reinforce my fond memories of the U of I."

Pabst worked on crystal structures and received the Roebling Medal of the Mineralogical Society of America, of which he had been president.

THIRTIES

Willis M. (Bill) Decker (B.S. 39) has been attending several Elderhostel schools each year since his retirement. In January, he and his wife spent three weeks in Cordoba, Argentina, visiting a former A.F.S. student who lived with them in Oklahoma City during the 1959–60 school year.

FORTIES

Allen F. Agnew (A.B. 40, M.S. 42) has just completed a four-year term on the national executive board and as secretary of his fraternity, Alpha Kappa Lambda. He continues to serve as chapter advisor to the Phi Chapter of AKL at Oregon State University, where he is courtesy professor of geology.

He writes, "Our motor home makes trips to the coast and mountains comfortable and thus enjoyable for age-ing (euphemism, 'maturing') bones and muscles, for F.F.F. (Favorite Frau Frances) and me."

FIFTIES

Charles R. Dellenback (B.S. 52, M.S. 53) retired in 1986 after 32-plus years with Exxon. He lives in Midland, Texas. His retirement activities include golfing, camping in the western mountains, trout fishing, and reading; "Who could ask for anything more?"

The City Colleges of Chicago employ **Milton F. Langer** (B.A. 51, M.S. 55) to teach earth, physical, and environmental sciences. He currently is at the R. J. Daley College campus.

For the 1987–88 academic year, Langer was selected as the colleges' faculty representative of the physical sciences in Europe. The City Colleges of Chicago has a contract to teach military personnel college-level courses in Europe. Langer was based in Stuttgart, Germany, and traveled as much as 150 miles to teach for one-and-a-half hours.

During his free time in Europe, Langer traveled to more than 12 countries, including Romania, Hungary, France, and England, and also reviewed some of their environmental problems and programs.

Robert N. Grinnell (B.S. 51, M.S. 52) retired nearly five years ago from Mobil Oil. He and his wife divide their time between Houston and Jackson Hole, Wyoming.

Frank Lawrence (Larry) Doyle (Ph.D. 58) and his wife Giovanna are living in San Antonio. They are enjoying their son Michael's graduation from college in 1989.

At the 28th International Geological Congress in Washington, D.C., last summer, he finished five years as head of the U.S. group of the International Association of Hydrogeologists and as member of the National Research Council. He says that he "enjoyed working with several Illinois grads on planning the hydrogeology program of the 28th IGC."

Immediately after he "retired" from the Secretary's Office of the Department of the Interior in 1987, Doyle resumed consulting work with the nonprofit MITRE Corporation in San Antonio. They advise the Air Force on hazardous material cleanup and management.

In early September 1989, **John B. Droste** (B.S. 51, M.S. 53, Ph.D. 56) received the Outstanding Educator Award from AAPG. The award cited his work with numerous students in 32 years at Indiana University, and his many professional memberships and honors.

Jack C. Threet (B.S. 51) is cofounder, partner, director, and vice president of Energy Exploration Management Company, in Houston. Founded in early 1989, the company is involved in the search for oil and gas deposits across the United States onshore. The other four cofounders of the company are all retired heads of exploration at major oil firms; between them, the five men have nearly 200 years' of exploration experience at home and abroad.

"Our initial focus," Threet explains, "is U.S.A. onshore, where we believe significant opportunity still exists for discovery of profitable oil and gas fields. At present, our investor backing comes from Canadian Hunter, a large independent Canadian oil and gas exploration and production company."

Threet retired from Shell Oil Company in 1987. He joined the firm in 1951, and had served as corporate head of exploration for nine years just prior to his retirement.

He continues his involvement with AAPG, where he serves as trustee associate for the AAPG Foundation. He serves on ad hoc committees to raise corporate funds for AAPG's major publication, *Treatise of Petroleum Geology*. He also is director and vice chair of the Offshore Technology Conference in Houston.

He and his wife Katy now spend winters in Houston and summers in Pagosa Springs in southwest Colorado.

SIXTIES

Paul L. Plusquellec (M.S. 66, Ph.D. 68) lives in Gretna, Louisiana, where he is vice president of operations for CNG Producing Company, New Orleans. He supervises all engineering: reservoir engineering, drilling, production, and operations, both offshore and inland. CNG is a wholly owned subsidiary of Consolidated Natural Gas Company in Pittsburgh.

He and his wife Betty have three college-aged children: Paul Jr., Alan, and John.

Since 1979, **Norman J. Page** (M.S. 60, Ph.D. 61) has been an independent oil and exploration consultant in Houston, for both domestic and international clients. Lately he

has been particularly active in South America, in association with Robertson Research. This month he is completing two years as project director for Robertson in a B.I.D.-financed exploration program for Petroperd.

Since leaving Illinois, Page has worked for Standard Oil in Corpus Christi, Tenneco in Nigeria and Lafayette, Union Carbide in New York City, and Ashland Exploration in Houston, where he was manager of international exploration from 1974 to 1979.

David L. Gross (M.S. 67, Ph.D. 69) has taken a one-year leave of absence from the Illinois State Geological Survey, where he has worked for 20 years. Currently he is serving as the first executive director of a new arm of government in the State of Illinois: the Governor's Science Advisory Committee.

As chief of staff, Gross works with the governor's science advisor, Dr. Leon Lederman (Nobel Prize in Physics, 1988), to make recommendations about science and technology, including suggestions for the state's new $20 million challenge grant program.

As of January 1, **Marion E. (Pat) Bickford** (M.S. 58, Ph.D. 60) became Jessie Page Heroy Professor of Geology and chair of the department of geology at Syracuse University, New York. He is ordering equipment and designing laboratories for new isotope geochemistry research facilities. He intends "to improve an already strong department at Syracuse until it is one of the best in the country. My new colleagues share in my enthusiasm for this goal and the university is fully supportive."

With the new post, however, Bickford had to relinquish his role at *Geology* magazine, which he had edited since 1987.

In November, Bickford and his wife Betsy became grandparents for the first time.

J. William (Bill) Soderman (M.S. 60, Ph.D. 62) lives in Orchard, Texas, where he works for BHP Petroleum. As vice president for new ventures–Americas, Soderman oversees strategic exploration for hydrocarbons in the Western Hemisphere.

He writes, "I survived sale of one company and two restructurings at present employer. It is reassuring, however, to be employed by a financially sound company that sees much of its future in oil and minerals.

"Three grandchildren make Jan's and my life richer as well!"

SEVENTIES

Mark P. Cloos (B.S. 76) received the first GSA Young Scientist Award, the Donath Medal, at the society's 1989 annual meeting in St. Louis. The award, established in 1988, recognizes a scientist 35 years old or younger for outstanding achievement in contributing to geologic knowledge through original research that marks a major advance in the earth sciences.

GSA News and Information (October 1989) said that Cloos's "research on the processes that affect the structural, metamorphic, and sedimentological

Mark Cloos

evolution of modern and ancient convergent plate margins has produced new understanding of how the same processes can produce different kinds of margins. His interest in blueschist facies metamorphism and thermal history, melanges, and fluid-inclusion and isotopic analysis of mineralized veins in accreted sediments has produced several significant contributions and new ideas on these subjects."

Cloos currently is associate professor at the University of Texas at Austin and a research associate at the UT Institute of Geophysics.

John Nelson Jr. (M.S. 73) is on a one-year exchange with a geologist from the Montana Bureau of Mines and Geology. While living in Butte, he will study the structural development of the Cat Creek anticline, located about 75 miles east of Lewistown in the central part of the state. The first commercial oil field entirely in Montana was developed on this structure. Apparently the anticline is underlain by a fault that underwent recurrent movement since Precambrian time.

In 1988, Chevron transferred **Gerry Valenti** (B.S. 77) to Papua New Guinea, where he is doing structural interpretation in a remote fold and thrust belt in the country's southern highlands.

Toni Jost Nicholson (B.S. 79) is working in engineering geology and hydrogeology for the U.S. Army Corps of Engineers, Savannah District. She has been with the corps since 1984.

She worked part-time as a petroleum and coal geologist for a small consulting firm in Lexington, Kentucky, while going to graduate school at the University of Kentucky. She earned her master's in geology there in 1983, with a thesis on "Geology and the Accumulation of Hydrocarbons in the 'Big Lime' and Bordon Group (Mississippian) and Pre-Chattanooga (Silurian-Devonian) of Knox, Laurel, and Whitley Counties, Kentucky."

In September 1981 she married Bill Nicholson, a civil engineer. They live in Guyton, Georgia.

She writes, "I never outgrew my love of horses and presently have two that I ride daily unless I'm out of town doing fieldwork."

Susan (Wunder) Wintsch (M.S. 74) lives in Bloomington, Indiana, where she is a contract writer and editor, currently with the National Science Foundation (*Mosaic Magazine*) and the Congressional Office of Technology Assessment. She earned a master of arts in journalism from Indiana University in 1977.

Wintsch's son Timmy is now three-and-a-half years old.

Thomas P. L. Dowell Jr. (M.S. 72, Ph.D. 73) retired in 1983 at the age of 57 and now lives in Marianna, Florida.

After completing his doctorate, he worked for a year in quality assurance in Park Ridge, Illinois. In 1974 he transferred to Anchorage, Alaska, and became a consultant a year later. He contracted with the Corps of Engineers to determine the cost of removing World War II debris from "these beautiful islands (about $120 million)."

He also worked for the State of Alaska Capital Site Planning Commission as an environmental consultant. He wrote the environmental guidelines for developing a new capital at Willow, Alaska, and says, "Politics killed the move."

Dowell prepared community profiles for Alaska's Department of Community Affairs. This required "floating the Yukon and Kuskokwing rivers, visiting 14 native villages, inventorying infrastructures, and writing environmental profiles for these villages."

The last three years he spent in Alaska were as a computer applications specialist in the exploration department of ARCO Alaska.

Since his retirement, he has spent most of his time traveling throughout the United States, Canada, and Mexico.

Charles H. (Chuck) Simonds (M.S. 69, Ph.D. 71) is manager of life support development at Lockheed Engineering and Sciences, Houston. He manages a mechanical engineering research and development team for space suits, tools, and equipment used in space and on the surface of the moon, Phobos, and Mars.

He worked with moon rocks from 1971 until 1981, then went into the oil business, first with Texas Eastern and then with Energy Reserves Group, which was eventually bought out. After the oil bust in 1986, Simonds worked as an aerospace consultant, mostly with lunar, Mars, and space station projects.

His wife Jan heads the dance program at the University of Houston–Clear Lake. They have two children: Jennifer, 16, and Scott, 13.

William I. Ausich (B.S. 74) earned both a master's (1976) and doctorate (1978) from Indiana University. He currently is associate professor in the department of geology and mineralogy at The Ohio State University, Columbus. He already has received the department's Distinguished Teaching Award.

Ausich also chairs the North-Central Section of the Paleontological Society.

Tom (B.S. 72) and Maxine **Perkins** are now in Indonesia, where he is working for Oxy on a well being drilled in Iryan Jara, New Guinea. They expect to be there for another year.

Hani Khoury (Ph.D. 79) is vice dean of the faculty of science at the University of Jordan in Amman, Jordan. He is working with an international research team on the storage of radioactive waste.

Since January 1989, **Neil H. Whitehead III** (M.S. 76) has worked as a petroleum geologist with the New Mexico Bureau of Mines and Mineral Resources. He maps fractures, joints, and cleats in the San Juan Basin to

aid understanding coalbed methane production from Upper Cretaceous coals. He previously worked as an exploration and development geologist for Gulf Oil E & P, and then for Chevron, U.S.A., living in Casper, Wyoming, Oklahoma City, and Houston. Most of his work then was with the Powder River Basin and Kansas.

Steamboat Springs, Colorado, is home for **John Morrone** (B.S. 79), where he is district geologist for the Crary District Office of the Bureau of Land Management. He does fieldwork, mineral appraisals, coal exploration work, some oil and gas and groundwater work, and occasionally some teaching.

GeoMet Incorporated in Birmingham, Alabama, employs **Linda Lottman** (B.S. 77) as vice president and geologic consultant in the coalbed methane industry. She does fieldwork, mapping, computer evaluations, sales, and reporting; currently she is involved in projects in the Warrior Basin of Alabama, San Juan/New Mexico, and the Northern Appalachians. She also worked in Australia for two months in 1989.

Before joining GeoMet in 1986, she was a geologist in coal and minerals for USX Corporation, working in the Illinois Basin, Northern Appalachians, Warrior Basin, and in several coal basins in Utah.

She recently took a two-week scuba-diving trip to Australia's Great Barrier Reef and Coral Sea upon a live-aboard dive boat, where she also learned all about underwater photography.

James B. Murowchick (B.S. 76) is assistant professor in the department of geosciences at the University of Missouri at Kansas City. He teaches physical geology, mineralogy, ore microscopy, introduction to geochemistry, and groundwater geochemistry. He has ongoing research in low-temperature iron sulfides and in metalliferous black shales.

Murowchick earned both a master's (1979) and doctorate (1984) in geochemistry and mineralogy from Penn State University. He then held a two-year post-doc position at the University of Alberta in Edmonton, Canada. He taught chemistry and geochemistry at Mercyhurst College in Erie, Pennsylvania, for one year before joining the faculty at the University of Missouri.

His wife Pam is an environmental engineer at the Midwest Research Institute.

Murowchick plans to visit south China this summer for his black shale work.

Leah L. Rogers (M.S. 79) is a doctoral candidate at Stanford. She married Gregory Faris in June 1988.

Craig B. Smith (B.S. 74) works for BPI Geophysics at the University of the Witwatersrand in Johannesburg, South Africa. He earned a Ph.D. there in 1983.

Currently Smith heads a radiogenic isotope research group of 10 to 15 scientists, postgraduates, and technicians. They research diamond geology, crystal evolution, Antarctic geology, base metal and gold deposits, K-T boundary, Precambrian chronostratigraphy, and environmental topics. Silicon, lead, and neodymium isotopic systems are being used as chronometers and as chemical tracers in these studies.

EIGHTIES

Robert Dziak (B.S. 85) lives in Newport, Oregon, where he is a marine geophysicist with the National Oceanic and Atmospheric Administration. He assists with and develops research projects to study the geology and tectonics of the Juan-De-Fuca Ridge and their relation to existing hydrothermal systems along the ridge.

He writes, "My job requires me to spend a couple of months each year at sea, and how to deal with seasickness isn't something they taught me in my geo classes at the U of I."

He earned a master's in geophysics from Memphis State University. His thesis was on the source parameters of large earthquakes near North Island, New Zealand. He also worked for a year at a geotechnical consulting firm in Northbrook, Illinois.

Steve Greb (B.S. 82) lives in Lexington, Kentucky, where he works for the Kentucky Geological Survey.

John M. Kruger (B.S. 83), formerly of Missoula, Montana, visited the department early this fall. He is now pursuing a doctorate at the University of Wisconsin–Madison.

Valla Dee (Jones) Earl (B.S. 84) lives in Sheridan, Wyoming, where she is teaching engineering graphics at Sheridan College. She is expecting a baby in June.

Scott Krueger (M.S. 85) recently left British Petroleum

to join Cox and Perkins, an independent oil company in Houston. He is an exploration geologist for onshore Texas.

He and his wife Kim live in Sugarland with their three sons.

David Thiel (B.S. 83) completed his master of computer science at the University of Wyoming last August. He is an application support engineer with the Hewlett-Packard Network Printer Operation in Boise, Idaho.

After graduating from UIUC, he spent six years doing biotechnology research at the University of Wyoming. He notes that "while in Wyoming, I shot my first deer on the famed Bear Claw Ranch!"

British Petroleum Exploration employs **Michael L. Sweet** (M.S. 83) as a sedimentologist for its research group. He earned his Ph.D. from the University of Texas at Austin in 1989.

Scott Mansholt (B.S. 82) is now a senior staff hydrologist with Hydrologic Consultants, Inc., in Lakewood, Colorado.

Rasool Okhravi (M.S. 81, Ph.D. 83) lives in Tehran, Iran, where he teaches petrography, depositional models, and microfacies. One of his graduate students is working on the Do Baradar Reef about 150 kilometers south of Tehran. Others are planning to work on carbonate hosted lead and zinc deposits.

Grant Olson (B.S. 81) still is a mixed animal veterinarian with Town and Country Vet Clinic in Winona, Minnesota.

He writes: "Still currently slaving away in manure and fly-infested dairy barns and dabbling in small animal (companion animal) medicine and surgery. I plan soon to move on to a small animal practice closer to civilization and concentrate on more leisure-time activities. [There are] Far too many late-night and early-a.m. calls in dairy and horse practice.

"My only contact with geology at this point is my preferred way to study hydrology—windsurfing. (Nancy Beresky would be appalled!)"

Robert S. Mayer (B.S. 81) is self-employed as a personal computer consultant in Northbrook, Illinois. He specializes in local area networks and database design. He spends about half his time training end-users from the introductory through the advanced levels.

He is married to Kathy Romano, and they have a two-and-a-half-year-old son, Scott. They were expecting another child in November.

Polly Lee Knowlton (M.S. 80) earned a master's in science education from the University of Tennessee in 1985. She taught high school chemistry ("heavy on the geochem!") in Knoxville until her first son was born.

In 1984 she married J. Robin B. Cockett, a theoretical computer scientist from London, England. They have two sons: A. Grayson B. Cockett, four, and Archa Rowan B. Cockett, 15 months.

The family is "leaving the glorious view of valley and ridge and Great Smokies of Knoxville for two years in Sydney, Australia, where Robin has a mathematical research position with Macquarie University."

Faith Stanke Fitzpatrick (M.S. 88) works for the U.S. Geological Survey, Water Resources Division, on the National Water Quality Assessment of the upper Illinois River basin in Illinois, Indiana, and Wisconsin. With the aid of a geographic information system, she presently is studying the effects of human and natural factors on stream quality.

She married William Fitzpatrick on December 8, 1989. He is a scientist with the Illinois State Water Survey. They live in Urbana.

Woodstock, Vermont, is home for **Sandra Sopkin Haupt** (B.S. 80), who is now studying environmental law at Vermont Law School. She says "it's a great field for people with technical environmental backgrounds (i.e, geology)." She has been awarded the Switzer Environmental Fellowship, a $10,000 grant for students in an environmental field in New England or California.

She writes: "Vermont is an incredible place to live—lots of interesting geology, beautiful farms, and even some culture (we're 30 minutes from Dartmouth)."

Michael T. Reade (M.S. 80) lives in Southfield, Michigan, while he is pursuing a library science degree. His wife Greta Dickerson, who spent one year at UIUC, works as a geohydrologist. They have two daughters, Janice and Corin.

Donald Von Bergen (M.S. 85, Ph.D. 88) lives in Lafayette, Louisiana, where he works as a development geologist with

Chevron U.S.A.'s Western Division. He works one of the firm's most active offshore areas, developing recently discovered gas fields.

His second daughter, Sarah Grace, was born October 18, 1989.

Greg Jarvis (B.S. 85) lives in Westminster, Colorado, where he works for the U.S. National Park Service. He and his wife Traci became parents of their first child, Kiersten Jo, on November 8, 1989.

Eric W. Lipman (M.S. 82) lives in Houston, where he is taking courses that should enable him to work in the area of hazardous waste assessment and treatment (i.e., groundwater hydrology, groundwater geophysics).

In June 1986 he married Deborah Rabson Fee and is the stepfather of David Fee, 13. He and his wife have a daughter, Michelle, just over one year old.

OBITUARIES

John Truax Wilband (Ph.D. 65) died May 18, 1989, while attending a meeting of the Geological Society of Canada.

He was born in Montreal, Quebec, on May 26, 1938. He attended the University of New Brunswick in Fredericton, New Brunswick, Canada, where he earned a bachelor's (1960) and master's (1962) in geology.

Mr. Wilband taught at the University of Toledo, Ohio, from 1965 until 1975. He then joined the faculty of Michigan State University in East Lansing, where he was professor of geological sciences.

The MSU department of geological sciences recently named and dedicated its neutron activation and X-ray fluorescence labs the "John T. Wilband Analytical Laboratory."

The department also has established the "John T. Wilband Memorial Scholarship in Geological Sciences" to be used primarily to support students attending field camp. Contributions should be made payable to "MSU/Wilband Memorial" and mailed to: Development Office, College of Natural Science, 103 Natural Science Building, Michigan State University, East Lansing, MI 48824-1115.

Mr. Wilband is survived by his wife Vivian; their two sons, John and Lee; one daughter, Kimberley; and one grandson.

Help us find your "lost" classmates!

In last fall's newsletter, a list of "lost" alumni was printed. We heard from—or about—a few of those missing alums in response to the list. In preparation for a future directory of geology alumni, we will continue to print an updated listing of "missing" graduates; if you know the whereabouts of one (or more!) of these individuals, please drop a note to Pat Lane, department secretary. Thanks for your help!

Budd B. Adams
Bruce R. Adamson
Alan Aller
David William Allman
Ernie D. Allsop
Leslie Grove Anderson
Sumner M. Anderson
Pauline Babet
Jeannine Balsamo
Evyn G. Barnard
Richard B. Beals
Vivian Beeler Jr.
Allan G. Bird
Lowell R. Bostrom
William P. Brackin
Steven M. Brennecke
Mary E. Brownlee
Edward F. Buck
Craig E. Butler
Louis W. Butler II
Jean McGinnis Callahan
Terry L. Carius
Peter Alexander Carr
Brian Williams Carss
Sheryl A. Chargo
Livingston Chase
Russell J. Church
Sally A. Cole
James W. Dean
Sergio Na Debrito
John James Delimata
Andrew T. Denaray Jr.
George A. Dickie
Harlan Bernard Dodge
Bruce Edward Dollahan
Eugene Gerald Dorn
Erhan Dulekoz
John K. Eccles
Richard Alden Elliott
Michael J. Erickson
Wesley Tyler Erickson
John Wood Fanning
Jeanne Seaman Farnum
James Norman Fears
Dan Edwards Feray
Susan M. Camp Fiello
Paulo M. Figueiredo-Filho
Larry S. Foreman
Timothy Devine Fosser
Stanley Harold Frost
Mark Theodore Fulmer
Linda Provo Fulton
Jay Owen Gallagher
George J. Gatsis
Constance Elaine Gawne
Douglas Gleim
Michael Edward Glowacz
James Edward Goodin
Kurt A. Grove
Peter L. Hahn
Latif Said Hamdan
Susan P. Harp
Denver Harper
Lois Schulz Herring
Peter A. Hetherington
Philip R. Hodgson
James Roy Howard
John Bancroft Hunt
Richard Francis Inden
Thomas L. Jones Jr.
William Kagami
Atilla U. Kaprali
Fred Kern Jr.
Elsa M. Kiwiet
William J. Knapp
Alfred George Knoll
Donald Carl Kochinski
Anthony C. Kuhn
John Thomas Kummer
Michael B. Lamport
Ralph George Larson
Yaghoob Lasemi
Joseph J. Letko
Robert A. Linka
Teresa Luning Lucas-Salgado
Tso-An Ma
David Walter Mack
Roger Conway Malan
Raul D. Maruri
Donald Leo Maurer
Jorge I. Maycotte
Elmo James McGovern Jr.
Samuel Carl McMackin
Michael G. McMahon
Albert Lawrence Meyers
Michael Charles Moore
Faris Knoble Moyer
Robert E. Murphy Jr.
Lynn L. Napoleoni
Joseph Ichiro Naruishi
Wilbur Fayette Near Jr.
Mark Denny Nelson
Marylinn Nicholson
Donald Eugene Noll
Frank John Nowak
James P. O'Connor
Kathleen M. O'Neil
Kenneth Gene Page
Robert L. Painter
Dwight Pearce
Patrick T. Philbin
Ruth Violet Roselle Plain
Donald Robert Ramberg
Richard B. Ridley
William Franklin Ripley
Donelson A. Robertson
John Robert Rogers
Robert W. Root
Jack J. Rosecrans Jr.
Leslie R. Schenck
Sohrab Shayani
Kenneth Ray Sheppard
Fred R. Shirley
Joan Caperton Shorter
Raymond Shrode
Sushil Kumar Siddhanta
Alan F. Skrzyniecki
Raymond Leroy Slovinsky
Earl Lloyd Soley Jr.
Charles Arnold Sorrell
Roy H. Spitzer
Donald West Sprouse
Rakchai Srilenawat
Thomas R. Stewart
Kenneth Allen Stone
Hayashi Sugahara
Bruce Irvin Susong
Robert J. Szumal
Linda A. Tills
John E. Trummel
Robert Francis Urbano
Richard L. Vega
Arthur Lee Vincent
Carl Wayne Vinyard
John William Vukovich
Beulah M. Waggoner
Margaret M. Pendleton Weber
Melvin Irenaeus Weidner
William Charles Welch
Edward G. Wildanger
Timothy N. Willand
Breno Wolff
Larry Don Wood
William Frederick Wrath
Ronald Jacob Yochem
Warren Gilbert Ziebell
Ronald K. Zimmerman

Please take a few moments to let us and your classmates know what you've been doing: promotions, publications, election to office, marriages, parenthood, moving, awards. We'd all like to hear from you!

Response date _____

Name _____

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Degrees from Illinois (with year) _____

Degrees from other universities _____

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Present employer and brief job description _____

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Other news you would like to share _____

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Your comments on the alumni newsletter _____

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Deadline for September 1990 newsletter: July 10, 1990.

Place
Stamp
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Michelle Sanden Johlas
Editor, GeoSciences
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University of Illinois
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1301 W. Green Street
Urbana, IL 61801-2999

Department of Geology
Alumni Newsletter
Fall '90

GeoSciences

UNIVERSITY OF ILLINOIS

GeoSciences

Alumni Newsletter FALL 1990

Homecoming
October 20, 1990

Illinois vs. Michigan

Postgame Cocktails
1504 W. William St.
Champaign, Il.

RSVP by October 1
217-333-3542
217-244-4066

GSA Meeting

Dallas, Texas
Oct. 29 to Nov. 1

Preregistration
September 28

Information:
GSA Meetings Dept.
P.O. Box 9140
Boulder, CO 80301
303-447-2020

Cover illustration: Electron photomicrograph (magnification = 4300X) of a diagenetic magnetite sphereule. This is the first image to clearly demonstrate that such spherules, which occur in Paleozoic limestone of midcontinent North America, are composed of euhedral microcrysts of magnetite, and cannot be detrital. The image was taken by **Gang Lu** (M.S. 89) during his thesis research on the resetting of paleomagnetic poles in strata of the midcontinent. His work, under the direction of Prof. Steve Marshak, is the first to demonstrate that all paleopoles of the midcontinent region were reset at the time of the Alleghanian orogeny. Such evidence is compatible with the proposal by Prof. Crag Bethke that major pulses of regional brine migration can be triggered by tectonic uplift along the margins of sedimentary basins. To make this image, Lu used the Geology Department's new JEOL scanning electron microscope. This instrument, part of the clay mineralogy lab directed by Prof. Stephen Altaner, was a gift to the department by the late Prof. Ralph Grim. Lu's results are published in *Earth and Planetary Science Letters,* and the image was reprinted in *Annual Reviews of Earth and Planetary Science.*

GeoSciences is the Alumni newsletter for the Department of Geology, University of Illinois at Urbana-Champaign. It is published in September and February of each year. **Staff:** Department Head: R. James Kirkpatrick; Asst. to the Head: Peter A. Michalove; Editor: Mary Daniels; Designer: Jessie Knox; Admin. Secretary: Patricia Lane.
Brian Skinner's photograph courtesy of Yale University, Office of Information.

Letter from the Head

The past six months have seen continued rapid change in many aspects of the geology department, including curricula, faculty, and the remodeling of the Natural History Building. It has been exciting if at times noisy (I write this in July against the sound of the builders' pneumatic drills), but I am extremely enthusiastic about these changes and very pleased with the results.

One exciting news item is that Joel Massmann has joined Craig Bethke in hydrogeology, making UI unique in boasting two Presidential Young Investigators in this field. We expect this program to be among the strongest in the country.

All of the recent innovations reflect the Department's commitment to the highest quality of education and research, your commitment as alumni to support us in this respect, and the University's belief in our mission. In large part, these innovations also reflect the changing nature of our own profession.

As you know, the dominant role of geologists as seekers of new resources has been supplemented in the past few years by an equally significant role in environmental preservation and management. Brian Skinner speaks of the global repercussions of our changing resource patterns in this issue of *GeoSciences*, and in the past several years an increasing number of you have found employment in environmental fields. As a result, we in the Geology Department are making the changes needed to prepare our students for these new functions.

Accordingly, some of the most exciting new changes have come in our educational program. The undergraduate geology and geophysics majors and the revised general graduation requirements we proposed last year are in full effect. Equally important, the Department has also approved a new undergraduate major in Environmental Geology. This program will allow our students the option of either finding employment directly upon graduation or continuing in graduate school. In particular, this new undergraduate sequence will allow the students to continue in a new, nine-unit master's program in Applied Geology. This latter will include studies in environmental geology, engineering geology, and hydrogeology. More job possibilities mean higher enrollment and ultimately a stronger profession. The new master's program is modeled after the highly successful program in UI's Civil Engineering Department. It is designed not only for our own bachelor's students but also to attract outstanding students from other universities. I believe strongly that these new programs will increase the depth and quality of training we offer, while enhancing the visibility and importance of UI's Department of Geology across the nation.

In keeping with technological advances within the field, we are also heavily involved in developing computer-based courses and computer-aided instruction. Craig Bethke has developed a classroom of computer stations, and his geochemical modeling course last Spring Semester was a test run that went very well.

Meanwhile, Steve Marshak and Philip Sandberg have taken a campus-wide lead in developing the use of computer-aided audio-visual systems and have used them in teaching introductory courses. As Philip Sandberg says, ours is a visual profession; being able to "show" students as well as "tell" them is a major teaching advance. I expect to see more courses developed that can use these capabilities, either wholly or in part.

In addition, Tim Clarke will be joining our faculty in January. Tim is a seismologist with a Ph.D. from Cambridge University in England. You'll read about him in the next issue of *GeoSciences*, and we'll also report in depth on Philip Sandberg's work in developing the Department's own computer-aided instructional system. At long last, we will also have "after" pictures of the remodeled facilities. Whenever you're in town, please drop by to see what is happening to your old lab.

I'm looking forward to seeing you at Homecoming, and hope that as many of you as possible will come back for it. Please let Pat Lane know if you need tickets for the football game. We'll be meeting again at my house for cocktails afterwards—please come. I also look forward to seeing you at GSA in October. Both occasions will give you the chance to let me know what you think about all of the new developments, and me the chance to share my enthusiasm about them with you.

GEOLOGY INSTRUCTION GOES HI-TECH

Marshak wins grants to develop new course

Steve Marshak

PLANET EARTH (Geology 100), a new hi-tech geology course with Hollywood-style graphics, makes its debut this fall.

Developed by Stephen Marshak, the new course is designed to attract non-science majors to geology by fulfilling the general education requirements of LAS in physical sciences.

The new course uses the Integrated Teaching System (ITS) developed by the university's Division of Instructional Media and Technology. ITS is an integrated unit containing a Mac II and an IBM P/C computer, a video camera, a video tape player, and a 35mm slide projecter--all in one box that sits on the instructor's lectern.

While lecturing, the instructor can call up video (or film) clips or computer graphics, or use the video camera for live-action demonstrations. The images are projected onto a ten-foot, diagonal back-lit screen and are visible in full light.

"The course will also use computer simulations to illustrate the progressive development of geologic features," said Marshak. "One of the programs to be used was written by **Dave McEachran** (M.S. 85), who now works for Rockware, Inc. in Denver. That program illustrates the consequences of rock deformation."

While preparing visual aids for the new course, Marshak accumulated a collection of some 2,500 slides and 35 recently produced video tapes. These will be available for use in all undergraduate geology courses.

Funds to develop the new course were provided by an Undergraduate Instructional Awards Program grant supplemented by a grant from the Division of Instructional Media and Technology.

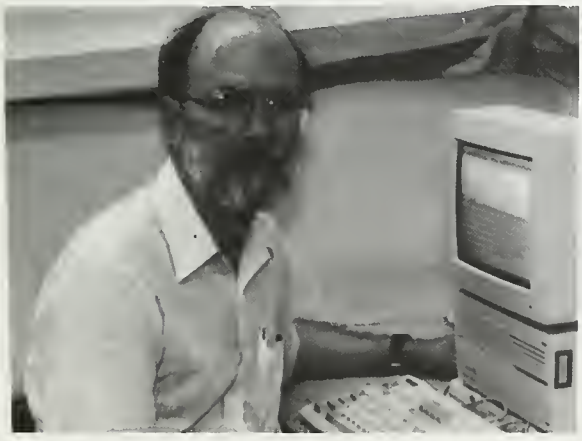
Sandberg to develop department's own facilities

IN A FURTHER DEVELOPMENT, Professor Philip Sandberg, along with Marshak, has been awarded an Apple "Seedling" for two advanced MacIntosh computers and imagers in order to develop computer-based education in introductory geology courses.

Sandberg's plan is to develop the department's own facilities so that it need not rely on the limited number of ITS-converted classrooms. At the moment there are only four of those on campus.

"Last [Spring] semester I made some use of embedding graphics within a hypertext lecture outline," said Sandberg, "but this year I will be doing much more."

Sandberg decided to obtain a facility for the department itself after having the opportunity to use computerized instruction earlier than he had planned.



"Last [Spring] semester, the enrollment in my Geology 102 (History of the Earth) course was larger than the capacity of the classroom I had been assigned. No other classroom was available on campus, and in desperation I talked to Steve Marshak, who suggested I try to get into the ITS computerized classroom controlled by the Office of Instructional Resources. That room was available, but only for one of my two Geology 102 sections.

Sandberg was undaunted by the prospect of teaching by computer. "I'd got my first Mac in the spring of 1984 when they first came out, so Mac work was something I could do in my sleep."

He had been in the habit of computerizing his lecture outline, and with a hypertext program he already owned, he embedded within it graphics, definitions, and answers to questions he anticipated from the class. Using the ITS system, he projected his new outline onto the screen.

"The only big problem," Sandberg said, was that the computerized outline made it too easy to go too fast." As a corrective, he used students' feedback to adjust his pace.

Sandberg remarked that the new method is a nonlinear way of

New facilities*(cont.)*
teaching, but one that allowed his computer class to grasp the material better than the section he taught in a "traditional" classroom.

"I did notice that a few students in the traditional class said, 'I don't know where we're going,' but none in the computer class noted that problem," said Sandberg. "Some students were skeptical about the computerized lectures in the beginning," he added, "but [their] reaction at the end of the course was overwhelmingly positive."

Summing up the experience, he said, "I think that the inclusion of graphics is very important because Geology is such a visual science and relies so heavily on images of maps,
cross sections, rocks, fossils, and field relationships. In that sense it's doubly important for Geology to incorporate graphics because it is so much a part of the discipline."

Sandberg spent the summer making further refinements to his system and will introduce them this fall in Geology 143 (History of Life), a course also taught by his close colleague, Dan Blake.

Self-teaching exercises planned

Dr. George deV. Klein has won an Apple Seedling grant for a computer he'll use to develop computer-simulation exercises in both his lower and upper level courses.

Simulation exercises provide an opportunity to "not only teach students the basic laws and paradigms of geology, but permit them to work more freely and independently on their own," said Dr. Klein. In this way, students can "directly become involved in scientific experimentation well beyond the standard approaches now common to scientific instruction."

The department has supplied funds for the software, and the next step is to hire a computer reserecher. He expects to have the programs operating within eighteen months, he said.

Daniels awarded first Geothrust Fellowship

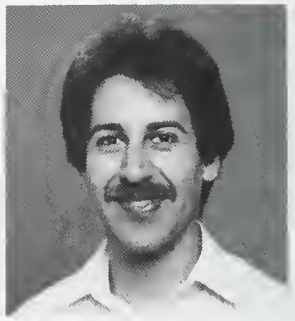
The alumni-supported Geothrust fund has established the Geology Department Annual Fellowship carrying a $12,000 stipend for twelve months. For the academic year 1990–91, the department's Admissions Committee voted to award the fellowship to Eric Daniels.

Daniels is working on his Ph.D. thesis, which examines the origins of clay minerals in coal from the Anthracite region of eastern Pennsylvania.

Says his thesis supervisor, Stephen Altaner, "Eric's results suggest that Alleghenian-age tectonic uplift induced the uplift induced the flow of deeply circulating, hot groundwaters, which affected patterns of diagenesis over a broad region of the Appalachian basin. The postulated hydrothermal fluids produced a mineralogically and chemically distinct assem-blage of clay minerals in joint sets of the coal.

"In addition, Eric proposes that the heat transported by the upwelling fluids significantly reduces the postulated depth of burial for the Anthracite region, which has long been regarded as an enigmatic thermal hot spot."

Daniels' research has attracted



the attention of a wide variety of geologists including those interested in coal, clay minerals, structural geology, tectonics, and hydrogeology.

His awards include Best Student Paper at both the 1988 Clay Minerals Society meeting and the 1989 Organic Petrology Society Meetings; the Antoinette Lierman Medlin Scholarship from the Geological Society of America to support excellent student research in coal science, and a research grant from the Clay Minerals Society.

Stephen Altaner has recently received a three-year grant from the National Science Foundation to suport this research.

Eric Daniels received his B.A. from SUNY at Binghamton, and is beginning his fifth year in UI's geology department.

Geothrust committee to meet over Homecoming

The Geothrust Committee will meet during Homecoming Weekend, October 19-20, to plan fund-raising strategies for the coming year.

Chaired by Alan J. Scott, the new members are **Glenn R. Buckley** (Ph.D. 73), **Harold J. Gluskoter** (B.S. 56), **Morris W. Leighton** (B.S. 47), **Hayden H. Murray** (B.S. 48, M.S. 50, Ph.D. 51), **Jack Curtis Threet** (A.B. 51), and **Caner Zanbak** (Ph.D. 78).

Henderson project "slow"

Professor Donald M. Henderson's project of collecting informal personal recollections from alumni that will be added to the University archives is "going slowly," he said. "The archives have a lot of documented information, but what I want is the undocumented material."

Alumni who wish to contribute their reminiscences to his project are urged to contact him.

Midwest will quake, rattle again—Chen

Fault lines cut the globe into "pieces" like those of a jigsaw puzzle, says professor Wang-Ping Chen, whose specialty is seismology. Because they have been "'worked' over the years with minor movements that occasionally erupt in earthquakes, many of those pieces are in poor condition." Those in the eastern United States may be in worse condition than those in the traitionally quake-prone West.

Although most of the noticeable quake activity takes place in the western part of the United States, there is also considerable minor activity throughout the East, Chen said, with a major quake expected, most probably in the New Madrid Seismic Zone from Missouri to southern Illinois.

Midcontinent quakes, unlike those along the coast, do not weaken away from the epicenter but cause very strong seismic waves over a wide area.

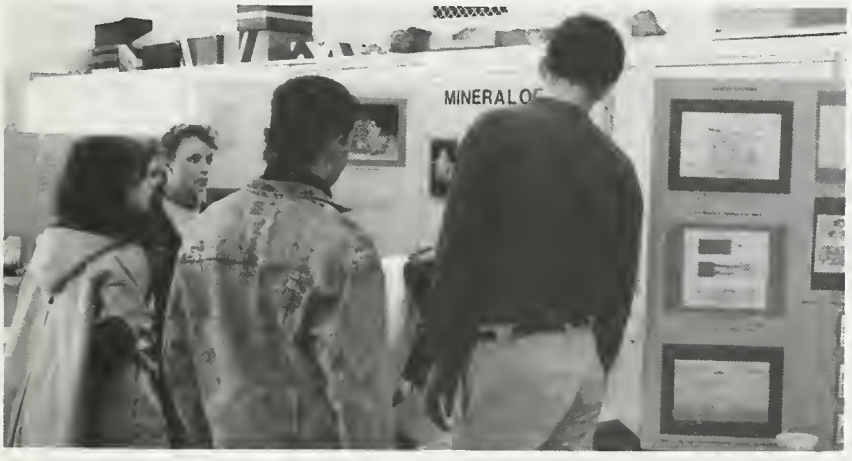
Chen said that the last major activity along the New Madrid area occurred when it sustained three major earthquakes just weeks apart during the winter of 1811–1812. They were mighty enough to change the course of the Mississippi River and create two waterfalls along its route.

"The sequence of three shocks amounts to the most drastic Midwestern earthquake," Chen said. "The consensus among geologists is that earthquakes will recur in that seismic zone. Earthquakes in similar seismic zones tend toward "temporal clustering"—quiet periods that can last for centuries, followed by active periods lasting for 200 to 300 years. In the mid-continent of China, for example, a seismic zone dormant for millennia became active, with nine major quakes over a 400-year period.

Other major seismic areas in eastern North America include the Wabash Valley Fault System, which runs through central Illinois and Indiana to Ohio; a seismic zone near Charleston, S.C.; another near Boston; and one along the St. Lawrence River Valley in Canada.

In an effort to improve prediction, the U.S. Nuclear Regulatory commission has established a national seismic network to examine characteristics of eastern and midcontinent earthquakes. Most of America's nuclear power plants are located east of the Rockies, and a nuclear power plant "has not yet stood the test of an earthquake," Chen said.

Chen encouraged the establishment of statewide earthquake monitoring programs in those states, like Illinois, that do not already have them. Such a network would help with the siting of critical facilities, with seismic risk analysis, and with collection and management of data, Chen said. *Adapted from Illinois Week, January 11, 1990.*



Students wait their turn to peer through the microscope at the mineralogy exhibit

Construction update

Friendly chaos reigned in the Natural History Building last summer as Geology and Life Sciences completed their space swap and contractors worked to finish Stage One of the construction by the end of September. Students returning in the fall found a new geophysics area and new labs and offices for Professors Jay Bass, Hilton Johnson, Philop Sandberg, Stephen Altaner, Craig Bethke and Joel Massmann.

The second stage of the work will run from September to December, as further lab space is carved out for Bethke, for the geophysics program, and as offices for Dr. George deV. Klein and Bethke are finished.

Said Peter Michalove, "we're really excited about the changes and think it will be a more pleasant, more efficient place for students and faculty to work."

Funds for the department's new look came from the Urbana Campus, the Division of Operations and Maintenance, the Office of the Vice-Chancellor, and the College of Liberal Arts and Sciences.

Geology hosts Open House

A fluorite sample weighing several hundred pounds, fossils, drill bits, and a core with oil-bearing sandstone were some of the exhibits on show at the Geology Department's annual Open House. "But our newest exhibit was a geology display in Loomis Lab with a geology rock quiz by Jennifer Distlehorst, designed to generate interest in our exhibits at NHB," said Geology Club President Scott Keithly.

Expressing thanks to Dr. James R. Kirkpatrick, the instructors who loaned rooms, and to members of the club, Keithly added, "We had a large turnout, including a number of people who expressed interest in attending our department."

New field camp for geology students

THIS SUMMER, Geology students from Illinois joined forces with their peers from several Big Ten universities to spend an intensive six weeks developing their field skills at the Wasatch-Uinta Field Camp in Park City, Utah.

Ten students drove two carryalls from Urbana to Park City. En route, they toured Rocky Mountain National Park and Dinosaur National Monument.

Arriving in Park City on June 17, they checked into their rooms at the Chateau Aprés, a dorm-style ski lodge with a heated pool and a view of the 3,300-meter-high mountain peaks.

At 7:30 A.M. each day, the students assembled for a drive of from 15 to 45 minutes to a given field area. During the first three weeks, they worked on mapping and section measurement exercises in Precambrian through Cenozoic strata. For the final three weeks they studied igneous and metamorphic terranes.

Exercises lasted between two and five days, each ending with a debriefing session. In the debriefings, faculty "described the accepted interpretation of the geology of the area, pointed out common errors made by the students, and reiterated the key geologic concepts and practices involved in the project," said Stephen Marshak of the University of Illinois.

Camp director Tim Holst (right) plans traverse strategy with Steve Marshak

If necessary, the group returned to the field to review any structures they had missed.

"Students had ample opportunity to practice specific field mapping and measurement techniques," said Marshak, "and were encouraged to develop their geologic intuition and their observational abilities.

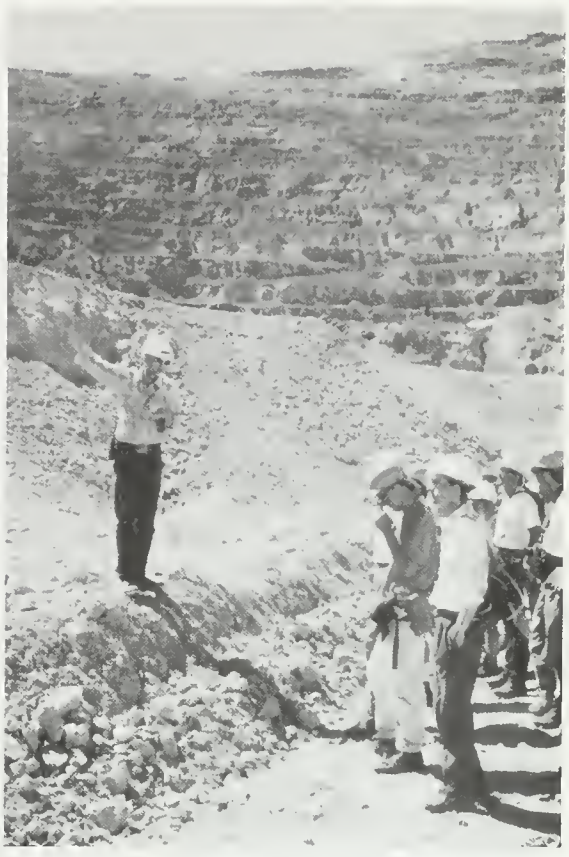
"Instructors emphasized the method of developing and testing multiple working hypotheses," he continued. "[They] spent most of their time in the field seeking out students to check maps and field notes," and otherwise provide advice.

Wasatch-Uinta Field Camp has been run for some 25 years by various combinations of Big Ten universities. This year, the 30 students who attended were drawn from Michigan State and the Universities of Iowa, Wisconsin, Illinois, and Minnesota at Duluth.

Faculty were Tim Holst (director) from Minnesota, Mark Reagan from Iowa, and Stephen Marshak from Illinois. **Marcia Schulmeister** (B.S. 85), now a grad student in geochemistry at Michigan State, was the teaching assistant.

Left: Group catching its breath after a three-kilometer hike up Ankara Ridge

TA Marcia Schulmeister (B.S. 85) discussing compass technique with Illinois student Scott Lockert in an alpine meadow at 3,200 meters



Students on an optional field trip to the Bingham Copper Mine. The mine geologist is pointing out alteration zones. At this locality, the students are at the bottom of "the biggest hole in the world."

Student-faculty diversity

"It was difficult to break with tradition," said Marshak, "but the move to Utah was necessitated by spiraling costs and decreasing geology enrollments. The co-operative effort at the Wasatch-Uinta camp not only decreases the cost to students and departments, but has the added benefit that our students get to know and learn from a diversity of students and faculty from several schools.

"Also" he added, "the camp's locality--at the boundary between the Basin Range and the Colorado Pleateau, within the Sevier and Laramide orogenic belts--is ideal for providing access to a variety of geology."

Student response to the new camp was positive, said Marshak, "and it looks as if we will continue our affiliation in the near future."

Students measuring stratigraphic section at the crest of the Wasatch Mountains

Department Grants 13 Degrees

The Department of Geology awarded Bachelor of Science degrees to the following students. The titles of their papers are in parentheses.

Andrew K. Finley (Late Chesterian/Early Morrowan Sea Level Fluctuations at Arrow Canyon, Clark County, Nevada); **Edwin Earl Hardt**; **Christopher Alan Hedlund** (Lateral Variation in displacement and geometry near the northern termination of the Whiteport Thrust, Fourth Lake, New York); **Laura Lynn Keefer-Harbison**; **G. Scott Keithly**; **Steven James Murphy**; **Mark Douglas Russell** (Interpretation of gravity data for the southern end of the Leinster granite in southern Ireland); **Kelly Arthur Rust**; and **Michael Andrew Smith.**

Master of Science degrees were awarded to **Chyi Wang** (Structures in Ordovician rocks of the Catskill-Kingston-Middletown area, southeastern New York), and **Lizabeth Clair Cahill.**

A Ph.D. was granted to **Joanne Kluessendorf** (Depositional and taphonomic Aspects of a Silurian (Brandon Bridge, Llandovery-Wenlock) Fossil Konservat Lagerstätte from Waukesha, Wisconsin (USA), predictability of North American Silurian Fossil Konservat Lagerstätten, and some insights into Ichnofacies."

Honors and Awards

Mary Ann Glennon was named Outstanding Woman Graduate Student for the 1990–91 school year. Glennon, who has comnpleted her second year in the Ph.D. program, is currently studying the source parameters of deep-focus earthquakes in the Kuril-Kamchatka subduction zone.

Christopher Alan Hedlund graduated Magna cum Laude with Departmental Distinction.

Eric Holdener has received the Morris W. and Ada B. Leighton award for graduate study in geology.

Edwin Earl Hardt was awarded the Estwing Pick, an honor that goes to the outstanding undergraduate of any year

Mark Douglas Russell, B.S Physics, Anthropology, and Geology, has been named a Bronze Tablet scholar—the University's highest distinction.

Russell graduated Summa cum Laude in May with departmental Distinction in Geology, and has won a Regent's Fellowship from the University of Michigan, Ann Arbor, to pursue graduate studies in geophysics.

Kelly Arthur Rust received the Brunton Award, an honor given the outstanding senior.

Mark Russell celebrates with his advisor, Ralph Langenheim, Jr., at the Commencement Buffet.

Honn Kao was named Outstanding TA for the 1989–1990 school year. He also received an Exxon Summer Research and Training Award for for research during the summer of 1990.

Kurt Larson has been awarded a University of Illinois Fellowship.

Laura Peterson received the Harold Scott Scholarship.

GEOLOGY'S FIRST ACCOUNTING TECH

Marsha Powell, the newest member of Geology's staff, is responsible for the day-to-day business functions of the department.

Powell transferred into Geology from the university's Accounts Payable Department in May, and while this is her third year as an Account Technician, she is the first such for Geology. She is on hand to assist Peter Michalove.

Having completed almost two years of accountancy studies, Powell would like to find time to pick up more courses, but her busy life currently includes caring for her daughter Morgan (10) and a second job at Carle Clinic. Her older daughter, Jamie, recently married.

"This is the first time I've worked directly with the professors," says Powell. "I am enjoying the experience; they are a lot less formal than I expected."

Marsha Powell

Faculty notes

Stephen P. Altaner has received $165,000 from the National Science Foundation for a three-year study of "Relations between diagenesis of organic and inorganic phases and tectonic processes: Formation of anthracite coal." He has also received $15,000 from the NSF and $7,500 from the University of Illinois Research Board for "Upgrading of an X-ray diffractometer."
Recent publications include:

Daniels, E. J., Altaner, S. P., Marshak, S., and Eggleston, J. R. (1990). Hydrothermal alteration in anthracite from eastern Pennsylvania: Implications for mechanisms of anthracite formation. *Geology* 18, 247–50.

Weiss, C. A., Kirkpatrick, R. J., and Altaner, S. P. (1990). The structural environments of cations adsorbed onto clays: ^{133}Cs variable-temperature MAS NMR spectroscopic study of hectorite. *Geochimica Cosmochimica Acta* 54: 1655–69.

Daniel B. Blake and his student **Steve Hageman,** attended a morphometrics workshop at SUNY at Stony Brook in June. The workshop was given for advanced graduate students and faculty, a third of which came from Europe and Canada.

Morphometrics is the study of how organisms change shape in evolution. The techniques are also used in medicine: one student was comparing the skeletal distortions of Down's Syndrome children in an attempt to determine how much they could participate in athletics.
Recent publications include:

Blake, D. B. (1990). Hettangian Asteriidae (Echinodermata: Asteroidea) from Southern Germany: Taxonomy, phylogeny, and life habits. *Paläont. Zeitschrift* 64 (1/2):103–23.

Blake, D. B. (1990). Adaptive zones of the class Asteroidea. *Bull. Mar. Sci.* 46.

Wang-Ping Chen testified before the Governor's (of Illinois) Task Force on Earthquake Preparedness in January. He also attended the Western Pacific Geophysics Meeting in Kanazawa, Japan, in August.

Albert V. Carozzi received the History of Geology award of the Geological Society of America at its annual meeting in November. He has also been appointed to the board of editors of a new periodical, *Journal of South American Earth Sciences* (Pergamon Press).

Carozzi divides his retirement time between the Rare Book Library of the University of Geneva, Switzerland, and his office in the Geology department. In Geneva he transcribes and studies 18th century manuscripts on geology. These are further studied and prepared for publication in Urbana.

In 1987, Carozzi was commissioned to write a history of the earth sciences in Geneva during the golden period of the city's Society of Physics and Natural History. The monograph, a quarto volume of 416 pages and 110 illustrations entitled *History of geology in Geneva between 1790 and 1815 based on the unplublished documents from the archives of the Society of Physics and Natural History of Geneva,* was published in January. The society celebrates its bicentennial in October.

In *Archives des Sciences,* Carozzi (with John K. Newman of the Department of Classics) has recently published an annotated translation from the Latin of a 1774 manuscript of the naturalist H.-B. de Saussure, *On the origin of mountains,* as well as an annotated translation from the French of Saussure's *On the classification of avalanches in the alps* (1795).

Meanwhile, his translation from the French of a 400-page volume entitled *Petrology of Soils and Chemical Weathering* by Daniel Nahon of the University of Aix-Marseille will be released shortly by John Wiley, New York.

The doctoral thesis of one of his last students, **Donald Von Bergen**, was published as a joint paper in the *Journal of Petroleum Geology* in April. The thesis dealt with experimentally simulated stylolitic porosity in carbonate rocks.

Carozzi's collection of thin sections of types of calcareous algae was the object of a catalog published in June by the Paleontological Section of the Museum of Natural History of Geneva, where this material is preserved, in its periodical, *Revue de Paléobiologie.*

Together with Marguerite Carozzi he has also translated from the French a 300-page book by Gabriel Gohau entitled *History of Geology,* the first textbook for advanced undergraduates to be published in this country on behalf of Rutgers University Press. It will be released in 1991.

In the field of sedimentary rocks, Carozzi is currently writing *Introduction to Sedimentary Petrography,* a text for advanced undergraduates to be released in 1991 by Prentice-Hall.

Richard Hay was the Judd H. and Cynthia S. Ovalline Lecturer in Geological Sciences at the University of Texas (Austin) in February.

In March, Hay and F. H. Brown of the University of Utah travelled to Shahpur, near Islamabad, to assist the British Archae-ological Mission to Pakistan in dating a site with geofacts more than a million years old.

Closer to home, he lectured at the University of Wisconsin in April.

George deV. Klein has won a $99,899 grant from the National Science Foundation for a two-year study using quantitative methods to discriminate tectonic from eustatic components of sea level change during the deposition of Pennsylvanian cyclothems of North America and northwest Europe. Recent publications include:

Willard, D. A. and Klein, G. deV. (1990). Tectonic subsidence history of the Central Appalachian Basin and its influence on Pennsylvanian coal deposition. *Southeastern Geology* 30: 217–39.

Klein, G. deV. (1990). Pennsylvanian time scales and cycle periods. *Geology* 18: 455–57.

The following invited publications are in press:

Klein, G. deV. (1990). Geodynamic and geochemical aspects of classification of sedimentary basins. *Jour. African Geol. Sci.*

Klein, G. deV. (1990). Origin and evolution of North American cratonic basins. *South African Jour. Geology.*

Six papers in Eidel, J. J., and Force, E.R., eds. Major sediment-hosted ore deposits: Basin analysis and Sedimentary processes in mineral exploration. *Reviews in Econ. Geol.*,v. 6.

Ralph L. Langenheim Jr. has taken over as book review editor for the *Journal of Geological Education.*

"Any of you who have an interest in reviewing should get in touch, and notify me of topics, frequency of availability, etc. You get the book, so, if there is an expensive monograph you'd love to have but would hate to pay for, give me a try."

He and his wife Shirley attended the Second International Congress on Brachiopods in Dunedin, New Zealand in January-February. In a precongress field trip on the Gondwana brachiopoda of Tasmania, they made substantial collections for the UI Museum.

They also attended a postcongress field trip on the Permian and Triassic of southern New Zealand, which included a visit to Lake Wakatipu and Milford Sound. "This trip was conducted by a geologist as well as a paleontologist," he said, "so we got a good briefing on the complex geology of the south island of New Zealand."

Langenheim's paper on paleo-biogeographic relationships between the Amazon Basin, southern Nevada, and the Canadian Arctic, will appear in the published proceedings "any day now. It was promised last May!"

In early July, Langenehim and five other scientists visited Ellesmere Island at the invitation of the Geological Society of Canada. They investigated the sequencing of carboniferous rocks at Sverdrup Basin. The GS of C believe that this is a significant place to locate the boundaries of the Mississippian and Pennsyl-vanian systems. Langenheim, who has an uninterrupted and complete stratigraphic sequence through the system boundary, will compare the fossils he collects with his own collection, the material becoming part of the data making it possible to recog-nize that boundary in any part of the world.

"Sverdrup Basin is of interest," he adds, "because it may become an important producer of hydrocarbons—perhaps with the potential to rival that of the north coast of Alaska. But exploration is only in its beginning stages."

Stephen Marshak received a two-year grant from the National Science Foundation for a collaborative field project in the Brazilian Highlands. In field seasons over the next two summers, he will work on the proterozoic tectonic development of the South American shield with geologists from the Federal University Ruro Preto in Minas Gerais, Brazil. The Lamont-Doherty Geological Observatory of Columbia University will provide geochronological support.

Last November, Marshak spent almost three weeks on an expedition to Zabargad Island, in the middle of the Red Sea near the Sudan-Egypt border, studying marble-derived peridotite. Zabargad has been a major source in the world of gem-quality peridots since the time of Alexander the Great, though no mining is now taking place.

Harold W. Scott sends thanks to all former students who bought a copy of *The Sugar Creek Saga* and therefore contributed to the departmental fellowship that has been set up in his name. The fellowship, to be used to bring outstanding graduate students with an interest in petroleum geology and related fields to the University of Illinois, has grown to about $24,000.

Getting away to the "real" world

For Fred W. Cropp (M.S. 56, Ph.D. 58), the Grand Canyon represents the "real world—not the world in which we normally spend most of our days."

Cropp, a geology professor at The College of Wooster in Ohio, invites alumni into that world by joining him on a rafting/hiking trip through the Grand Canyon next summer.

From May to July each year, Cropp conducts a series of nine-day trips down the Colorado River, but equal in significance to the thrills of rafting are the visits his group makes to many of the 25 side canyons.

"As a 1984 River Rat said when he looked at the valley of Tapeats Creek and up at the majestic flow of water from the Thunder River, rafting down the river is great, but *this* is the Grand Canyon!

Many of his "river rats" have reported thrilling, therapeutic, even transcendental experiences, says Cropp, and a number of them return year after year. To date he has guided more than 3,000 people through the Canyon.

The College of Wooster sponsors the trips. For non-smokers only, they are run by the Hatch River Expedition Company.

All boatpersons are experienced; on average they've been on the river for eight to ten years.

Interested? Then write for further details to F. W. Cropp, Department of Geology, The College of Wooster, Wooster, Ohio, 44961.

Brian J. Skinner:

The Global Nature of Resource Patterns

As part of the nationwide observance of Earth Day 1990, the Department of Geology invited Dr. Brian Skinner, professor of geology and geophysics at Yale University, to the UIUC campus to participate in the Millercomm lecture series.

Skinner focused his April 25 comments on "A century of resource use: Can the next century's feast be as rich?"

Noting that 20th century geologists, miners, and oil drillers have been highly successful in locating and producing a multitude of natural resources upon which today's society is based, Skinner said that many people are surprised to learn that "geologists spend a good deal of time and effort worrying about the adequacy of resources."

Geologists realize, he said, "that as populations grow larger, they will have to find new deposits faster. They are concerned that their very success may guarantee their ultimate failure."

Over the past century, geologists and industrialists have been adept at finding new resources, and technology has led to new ways to treat ores and provide better distribution systems. Because of this, resource issues that were previously thought of as national concerns now "have global dimensions."

In light of that, Skinner looked at the earth's resources from three perspectives: need, supply, and the consequences of their use. The question of supply, he believes, will *not* be the most important issue for coming generations.

What is important, said Skinner, "is the *consequence*, large or small, that use of a given resource has on the environment. No resource is totally free of environmental consequences."

Need or dependency?

Skinner quickly pointed out that without a need, a commodity does not become considered a resource. And when needs are fulfilled (if daily life is safer or easier, or doing tasks become more efficient), "a resource need can quickly become a resource dependency."

According to Skinner, "this is what has happened. The world's

population is now totally dependent on maintenance of an enormous and complex supply chain of resources. Each of us, no matter where we live, has now become dependent, directly or indirectly, on hundreds of natural minerals."

Skinner cited numerous figures to illustrate his point, including the fact that individual consumption on a global basis is now about ten metric tons per person, per year. A century ago, per capita consumption was only two metric tons annually.

In 1989, the world's five billion people consumed 50 billion tons of mineral products. This includes only the material actually used (to feed, clothe, transport, heat, cool, and entertain—and doesn't include everything moved in order to enable mining, construction, or any of the other disruptions to the earth's crust.

Population density offers another perspective, he said. "Excluding those portions covered by permanent ice, and those places above 5,000 meters, there are about 133 million square kilometers of dry land on which we can conceivably live, and from which we can produce or recover resources. Some, of course, is pretty mean land and climates are very inhospitable, but even so, each square kilometer can serve to supply some resources."

Today's population density is one person for a square 160 meters on an edge—just about the size of a city block. Skinner called this one's "personal support square—the scrap of land that must supply all the resources an individual uses throughout a life, and that must fulfill the same purpose

for others who follow. Somehow, that space must also consume most of the solid wastes left over."

By the year 2000, Skinner estimated that the support square will be 140 meters per edge, eventually diminishing to 100 meters. A century ago, the support square was 300 meters per edge.

"It is surely obvious," said Skinner, "that such a densely packed herd of large mammals—the human herd—must inevitably cause massive changes in the environment by simply being alive.

"One of the issues that faces us," he continued, "is whether or not those massive changes are also detrimental changes that will force our descendants to live mean lives."

An adequate supply

Examining resources from a supply perspective, Skinner said the key issue is whether mineral resources are adequate to meet the needs of the earth's population. In that regard, he said, "no country in the world is completely self-sufficient."

One thing, however, that geologists have learned is that "today's mineral-rich country is tomorrow's mineral-poor country."

The large, rich, and easily exploited mineral deposits are the first to be worked out, or at least down, until they are no longer profitable. When this happens, countries must begin to import needed resources. This is already happening in many industrialized nations, including the United States.

Skinner contended that "physical exhaustion of resources need not be a problem a century hence. Sufficiency, in a global sense, is not likely to be a limiting issue, but inhomogeneities of geographic distribution will almost certainly continue to be a major problem."

What seems likely, he said, is that major shifts in prices and supply patterns will occur for many mineral resources. This is so, Skinner said, because we will have to exploit "less attractive, more expensive ores in the face of level or rising costs for energy," and we will "have to start paying for the environmental costs of producing and using mineral resources."

In the future, Skinner believes we are likely to see a resurgence of mining in North America and Europe, although it would likely be in "blind deposits hidden beneath thick blankets of barren surface rocks."

Some ore bodies already have been found beneath nearly a half-kilometer of cover in a few favorable places, but this kind of work currently is expensive. Geologists must use three-dimensional mapping techniques to look for these buried deposits. Of course, many deposits are yet to be explored in the developing countries, "areas of difficult terrain, or places with histories of political instability."

Skinner looked at resource supply for fossil fuels and concluded that "we should expect the next oil crisis sometime between 1992 and 1995." He also believes that most of earth's future energy use will be as electricity generated by nuclear methods. Later, a combination of solar and fusion power is likely. All of these factors indicate that lifestyles will need to change, and Skinner believes the next century "will be a time of astonishing technological refinements driven by concerns about energy supplies."

Two quiet crises

Skinner admitted the importance of environmental issues that have received much media attention in the past few years: carbon dioxide, methane, ozone, contaminants in the ocean, air pollution. But, he said, there are "two quietly developing crises" that will be far more serious for the long term.

The first is that "more and more of the world's groundwater supplies are being withdrawn for irrigation and for household and industrial use in densely populated cities."

Because pumps and the fuel to run them are cheaper than damming

Brian Skinner, the Eugene Higgins Professor of Geology and Geophysics at Yale, may be best known for two of his textbooks, *Physical Geology* and *Earth Resources*.

His recent trip to UIUC was not his first; he had been here some 20 years ago, first to see the Illinois State Geological Survey, then to visit Fred Donath and Don Grath.

Skinner was pleased to be invited to speak in connection with the observance of Earth Day.

"I think it's very appropriate that the Geology Department sponsor an Earth Day event," he said before the lecture. "The most important of the natural sciences to understanding the environment is geology. Understanding and appreciating the role of geology is essential to all of us and our lives."

Raised in Australia and educated at the University of Adelaide (B.S.) and at Harvard (A.M. and Ph.D.), Skinner has taught at Yale since 1966. He previously had worked with the U.S. Geological Survey, including a four-year stint as chief of its branch of experimental geochemistry and mineralogy.

Among many other activities, Skinner serves on the board of directors for the Economic Geology Publishing Company and chairs the U.S. National Committee for Geology. He also chairs the Board of Earth Sciences and Resources for the NRC.

Skinner is editor for *Economic Geology*, considered one of the most influential journals in geology. He also works with *American Scientist*, *American Journal of Science*, and with Oxford University's "Monographs in the Geological Sciences."

His numerous honors include the Distinguished Contributions Award by the Association of Earth Sciences Editors (1979), the Silver Medal from the Society of Economic Geologists (1981), being named an International Lecturer by the Society of Economic Geologists (1985), and an appointment as Joubin-James Visiting Professional Lecturer at the University of Toronto in 1987.

rivers and building distribution systems,"groundwater usage has been seen as a good alternative. Accordingly, said Skinner, "withdrawal rates (of groundwater) in many places around the world equal or exceed recharge rates."

At first glance, it seems that stopping the pumping would solve the problem. But "food raised by irrigation is needed for the growing population, and cities that rely on pumped water cannot afford to pay for new dam systems."

"The water problem is an enormous one because it is so clearly related to the population density problem," continued Skinner. "More people, more wastes, more fertilizers, more contaminated wells—and daily more and more aquifers are dying."

A declining supply of arable land is the second crisis point, with soil erosion as a major culprit. Intensive use of marginal land has drastically stripped some areas of soil and rendered it unusable.

As a result of the reduced acreage available, farmers must increase yields on their available land. That is achieved through "continual cropping and the intensive application of fertilizers. Two massive consequences follow: "Soil degradation and increased rates of erosion."

Quoting the work of Sheldon Judson, Skinner said that around the world, annual soil loss amounts to about 25 billion tons per year—5 tons per person per year."

To have that much material redistributed "is a geological problem of global magnitude, and if continued unchecked, must eventually have massive consequences both for the environment and for food production."

Another of Skinner's concerns is the use of fertilizers and other chemicals on the arable land remaining. We are changing the local geochemistry, he pointed out, and we do not know how that might be changing the distribution and life-cycles of the planet's living species.

A new mindset

But Skinner is optimistic that the global society's thinking can be changed so we can live "in balance with our environment, as the handful of hunter-gatherers—our ancestors—were a hundred thousand years ago."

One program that could lead the way to that new mindset is "A Study of Global Change." This project of the International Council of Scientific Unions and the International Geosphere Biosphere Program is designed to describe, understand, and monitor all of earth's interactive physical, chemical, and biological processes and the impact human actions have on those systems.

This kind of study, Skinner said, "will lead to an understanding of our earth that is hard to imagine today. Our narrow, discipline-oriented approach to the natural sciences will disappear. . . . I predict that our thinking will change dramatically—we cannot stop the human herd from changing the environment, but we can learn which stresses cause the greatest rates of change, and before the next century has passed, we will have learned to modulate the rates.

"If we fail to do so, it will not be due to limitations of geological resources, but rather, limitations of the greatest resource of all—human intelligence."

Profile

BETHKE & CO.

"Hydrogeology in general is the study of the movement of water underground.

" Ninety percent of hydrogeologists are concerned with obtaining water supplies, or monitoring contaminants and pollutants. Most are therefore concerned with man's interaction with water.

"A small group is concerned with geologic processes and how they react over time. Our portion of the discipline is less traditional."

—Tom Corbet

Craig Bethke, the 33-year-old associate professor behind Illinois' innovative hydrogeology program, tries to run his bailiwick as a confraternity of peers.

"One of my goals," he says, "is to give my students the freedom to come up with their own creative solutions to problems."

By allowing his students a framework in which each performs independently, Bethke is able to combine the prolix duties of teaching and administration with his own, at times, controversial research.

Accordingly, a profile of Bethke is really one of Bethke & Co., his students and employees, the super-computing lab he created, and the lab's 12 industrial affiliates.

The research

At the heart of the program is Bethke's interest in the hydrogeology of sedimentary basins, crustal areas warped down and filled with sediments. He analyzes their processes as they unfold through geologic time.

To do so, Bethke and his group generate computer simulations composed of thousands of numerical equations and combined with data from a basin's stratigraphic, sea level, and plate tectonic histories.

Because basins contain almost all deposits of hydrocarbons and many important minerals, Bethke's work has important implications for geologists. Oil can move, he says, sometimes 100 miles or more from its source.

"Only one in eight wildcat wells comes in," says Bethke, "so strategies for lengthening those odds are of intense interest to oil companies."

Insights about geochemical processes are of further interest to sedimentary geologists, who study the ways fluids and sediments react with each other. For environmental geologists, basins can be the places where toxic and nuclear garbage might be buried and forgotten for 10,000 years.

If Bethke's work is significant, aspects of it are also controversial. An example is his study of overpressures and their possible origin.

If an oil rig unexpectedly hits an overpressured zone, the fluid will blow out the well. When that fluid is a hydrocarbon—oil or gas—the situation can be explosive.

A driller who expects a pocket of overpressure can compensate by making sure the drilling mud matches the pressure below. But a mistake by anticipating an overpressure where none exists can fracture the rock and let the hydrocarbon bleed away. Either way, a well can be lost.

The controversial nature of Bethke's work arises from the way he believes overpressures are formed. The theory he holds is not new, but until the onset of super-computer technology, it could not adequately be tested. His close associate and Ph.D. student, Chuck Norris, explains it this way:

"If the environment were static, we would expect [fluid] pressure at a specific level of the earth to approach hydrostatic—equal to the same pressure as a column of water. But in coastal basins, the pressures can be 2-1/2 times that pressure—high enough to fracture rock."

As explained by Norris, severe overpressure is the predictable result of the normal compaction of the sediment that forms these basins: the weight of compaction increases faster than the fluid can run out, thus forming a pressure pocket.

Consequently, overpressures are transient phenomena that occur in a world at the mercy of dynamic change—fluids flow not just at the surface but in the subsurface below. If you shut off that process, the area will revert to a steady state.

This directly opposes a theory that sustains a large segment of funded scientific research and guides the work of some major oil companies.

In that theory, overpressures are viewed as an artifact of physically isolated pressure cells in the subsurface; cells with their own integrity that remain unchanged for millions of years. How they were formed remains a mystery, but it is believed that only under special conditions will the fluids migrate.

"Because a rock is 60 million years old," says Norris, "it is a naive jump to say that any given, observable condition within that rock has existed for 60 million years. The thrust of UI research is that we think we really don't need the pressure cell concept to explain the existence of over- and underpressures."

As with many heated scientific controversies, this one has led to ad hominem attacks. Pinned on the bulletin board in the Hydro lab is the following quote from an article submitted to a geophysics journal: "The permeability structure used in . . . models of regional scale fluid flow [in Bethke's calculations] is a convenient fiction."

Tom Corbet and Ming-Kuo Lee are dealing with other aspects of subsurface flow. Corbet, who in December will be the first of Bethke's students to receive a Ph.D., has developed equations that can explain the cause of underpressures. According to Corbet, they evolve out of the process of basin erosion. As the rock relaxes, it becomes more porous; if the fluid cannot move in, the pressure drops.

"Craig is looking at fluid flow below sea level and at basins still receiving sediments," he says. "My interest is in computer simulations of how groundwater flow changes over time as erosion modifies the surface of the basin and changes the shape of flow patterns.

"Erosion takes enough weight off the remaining sediments, which expand so that pore spaces enlarge and water pressure decreases—all at a low rate over tens of millions of years. If the rocks have low permeability, areas of low pressure will be maintained so that water will flow *toward* those areas to make up the pressure deficit and seek equilibrium. This was a pattern we didn't expect."

Corbet became interested in underpressures when he worked with József Tóth at the University of Alberta. At the time they were examining the connection of petroleum deposits with ground-water flow patterns in an attempt to explain how oil fields form.

"We noticed strange pressure and flow conditions inexplicable in terms of modern topography," said Corbet. He came to Illinois to run simulations to see if the conceptual models he generated in Alberta were reasonable.

"Some were," he said, "but some were very wrong. The strength of the simulation tool is that it can allow the unexpected to occur."

Meanwhile, Ming-Kuo Lee, the first of Bethke's students to receive a degree (M.S. 89), studies sediment diagenesis. His master's thesis on the Lyons sandstone in the Denver Basin, a petroleum resource in Colorado, showed how chemical reactions could precipitate minerals in the pore space of the rocks and seal the petroleum into reservoirs at depth in the basin. (Alumni familiar with Professor Grim's work will find this of particular interest.)

In his thesis, Lee demonstrated that oil migration into the Lyons and the diagenetic attenuation that sealed reservoirs occurred in response to the uplift of the Rocky Mountain Front Range in the Eocene period.

Knowing that he will meet with strong resistance to this idea in some sectors of the scientific community, Lee quotes his advisor: "Craig says, 'If your research is good, some people may not like you, but they will respect you.'"

Getting in on the ground floor

Bethke's interest in using numerical models for basin study developed in 1980, the year he worked on sediment diagenesis at Exxon Production Research in Houston.

"I was lucky to get in on the ground floor," he says. "It has become a much larger topic now."

He moved to Illinois in 1982 to work with Pat Domenico on basin hydrology. In the meantime, however, Domenico had accepted a job at Texas A&M. Although Domenico offered Bethke the choice of joining him there, Bethke decided to stay at Illinois. This left him to complete his hydro studies on his own. Perhaps Bethke tries to give his students a similar independence now.

To develop his prototype hydrologic models of sedimentary basins, Bethke needed computers. There were none in the department, so he used the facilities offered him by Exxon and by ARCO, where he'd worked in the summer of 1983.

"They donated the computer time to me," he recalled, "but I had to go

From left to right: Gordon Madise (sitting), Walter Kreiling, Chuck Norris, Jeff Biesiadeki, and Ming-Kuo Lee

to Texas to do the modeling."

In 1985 Bethke received his Ph.D. and joined the department as associate professor. In the following year, the 28-year-old (by then) assistant professor won a Presidential Young Investigator award.

The PYI award, given by the White House to promising young researchers, includes research funding over five years that can be combined with funding from industry. Some of the award was used to bring talented students like Corbet and Lee into the department; some of it went to set up Illinois' own computer facilities.

As Chuck Norris says, "it was a time when the hardware was catching up to the conceptualization."

The hydro lab

Traditionally, basin studies have centered on either direct observation or on laboratory simulations. Norris recalls that when he came here after his master's in 1970, hydrogeologists worked in the basement, using pegboards and electrical connections to simulate flow patterns.

Synthetic flow models had been developed in the '70s, but the early models had to rely on slower digital computers. Such methods yielded insights, but observations could only be made about the instant when the hard data was collected. Analyzing what was roughly equivalent to a "snapshot" made it difficult to extrapolate those results with any certitude over geologic time.

What Bethke wanted was the equivalent of time-lapse photography showing the evolution of a basin over millions of years. The only way to achieve that was by supercomputer simulations that analyzed basin processes on natural time and distance scales.

Supercomputers rely on large memories and use special architecture to perform calculations rapidly by means of an acceleration technique called "vectorization." But Vector computers like the Cray are expensive to manufacture and maintain.

Aware that David Kuck, an Illinois professor of computer science, had conceptualized a novel parallel-vector architecture, Bethke oversaw the design of a lab centered on an Alliant mini-supercomputer using that.

The computer is now outfitted with ten inexpensive processors that share a common memory and work in parallel to rapidly compute the hydrologic models of basin evolution. It works at 70% of the speed of a Cray supercomputer, but only at a fraction of the cost.

Bethke and his group were the first in any field to publish applications of such a set-up.

Reconstructing geologic time

Using information such as temperature, fluid flow and rates of compaction from classical geology, Bethke and his students break it all down into computer-friendly numerical equations, combine those with graphics to illustrate the processes, and watch a given basin evolve through geologic time to see if a targeted phenomenon develops as predicted.

"The model he developed lets one look at millions of years of basic evolution in a few minutes," says Chuck Norris.

"It is a model that lets you look at a process as opposed to a condition. Before, we could only observe conditions and hypothesize about the process."

All current models are derived from two fundamental programs, *Basin2* and *Gt*.

Basin2 describes the flow of liquids through rock buried miles deep in basin strata.

Gt is a reaction model that describes chemical interactions among fluids and minerals. Both models are used to study how basins evolve, but at the moment they do not work as a single entity.

Supplementing these is *Act2*, a teaching/learning tool that helps the researchers understand what is happening geochemically. Less a research tool than a reference, Norris says that it can produce insightful observations.

With this arsenal, Norris says, "one could take on a problem the size of the Gulf of Mexico and then do something with the results. The new computers jumped the scale of what we could investigate."

With the work of Bethke's grad students, the original software has grown to six programs.

"Most of the grad students here develop research interests requiring computer programs that don't exist," says Corbet. "These are created by adapting other software. This becomes part of the material that goes out to the consortium. Each student adds to it."

The grads work on the basic codes, but four computer experts, Walter Kreiling, Jeff Biesiadeki, Gordon Madise, and Brian Healy, take care of different aspects of the programming.

Jeff, a graduate student in computer science, is a "numbers guru" who finds the quickest and most elegant equations to express the codes, and Walter and Brian design the graphics. Gordon is the Systems Adminstrator who sets up and oversees the hardware and, among other things, adapts the software to a variety of the lab's machines.

"It's really nice," says Corbet. "Otherwise we would never get through [with our research]. Previously the only way to visualize results was by simple pictures with a pen plotter. Now, they can render the results of a simulation on color prints or video tape in either two or three physical dimensions."

The industrial connection

Bethke, of course, had good rapport with a number of companies. The trick was to find a way to capitalize on the sort of academic-industrial relationship that he shared with Exxon, ARCO, and Amoco.

When Chuck Norris joined the department in 1987, Bethke tapped into his experience of both politics and the oil industry. Norris had run for Congress in Colorado, and had been president of his own oil company there before the "bust" in the '80s. In C-U he continues his social involvement via environmental politics.

Between them, Norris recalls, they "brainstormed the idea of an

industrial consortium as a way to provide a resource base for the lab and to gain exposure in the industrial world."

It took a year to work out the details of a contract acceptable to the University and the companies. To keep it simple, they set corporate funding at a "low-approval" level, so that a research department could make the decision to join. The contract runs for three years, thus guaranteeing a predictable economic base.

In return for modest but continuing funding, the companies receive license to the software and access to the group's research. In addition, the hydro lab runs an annual short course to transfer the technology they develop to industry.

Consortia have been set up elsewhere, but those have a high entry level, says Norris.

"We run much leaner here and we deal directly with the researchers. In addition, none of the research in the lab is proprietary; we publish all of the results."

The first contracts were with some of Bethke's early associations: Texaco, Amoco, and Exxon. But curiously, says Norris, the first formal member was Mobil (he ascribes this to their "quick-moving lawyers").

The 12 members of the consortium represent a substantial cross section of the oil industry (Mobil, Exxon, Unocal, Japan National Oil, ARCO, Conoco, Texaco, British Petroleum, and Marathon), and three computer firms (Alliant, Silicon Graphics, and QMS).

"We are not independent of grants," says Norris, "but the industrial support supplies stability."

Although the consortium is a funding vehicle, Norris says, "it puts us in contact with [different] types of research interests, it lets students have a better feel for jobs in private industry, and it lets them apply what they are learning now." Ph.D. student Kurt Larson, for example, spent this past summer in Tokyo working with the Japan National Oil Company.

"It's also an excellent testing vehicle for our software," continued Norris. "We get feedback as to how good our tools are, what problems they don't address, and what problems they work on that we never considered testing against. It makes the tools much stronger themselves and reinforces the credibility of the work we do here."

The coming year

In September, Bethke left for a year's sabbatical to study at the Paris School of Mines, the world's foremost institution for statistics and geological modeling.

"I'm hoping," he said, "to get a better description of real rocks as fluid flows through them. A big drawback of current work is that the theories are based on uniformity of that process, when it actually varies by the scale on which you observe it. I'm going to learn about an area I've never worked in," he continued, "but this type of understanding is very important to us and the work we're doing here at Illinois."

In his absence the department carries on. Through the lab's electronic wizardry, Bethke said that he will probably be in better contact with the program than he wishes: he took along a computer that can speak directly to computers here in Champaign-Urbana.

Tom Corbet will join Sandia Research in Albuquerque as soon as he finishes his dissertation. He'll be making flow models over, to him, a "short" period of around 10,000 years as he works on the problem of burying nuclear waste—possibly in salt caverns lying several thousand feet below an area of southeastern New Mexico. The salt's plastic texture means that the caverns won't fracture; their chemical make-up guarantees low porosity. Bethke will fly back from France in December so that Corbet can defend his thesis.

Chuck Norris continues to spend "brushfire days" running the consortium; Jean Daly, Bethke's assistant, continues to oversee the budget; and Ming-Kuo Lee, who is working on the Illinois Basin for his Ph.D., is buckling down to English instruction—a lower level skill, admittedly, but one (it has been decided by both Bethke and Lee's new wife, Sheen) crucial for him to communicate his ideas.

Joel Massmann, Bethke's fellow PYI who recently joined the department, has taken over some of the courses that Bethke taught and is working with the grad students.

The advantage of creating an independent entity is clearly that it has a life of its own. When Bethke returns, the innovations he dreams up in Paris will probably be matched in kind by the program he has momenarily left behind.

Profile

JOEL MASSMANN

The changing nature of our environment has expanded the role of geologists who, along with finding new resources, are increasingly called upon to preserve the ones we've got.

Water itself is in "quiet" crisis, as Brian Skinner pointed out.

"More people lead to more waste, more fertilizer, more contaminated wells. . . . " and more and more aquifers are endangered from pollution.

Geology's newest faculty member, Joel Massmann, is fascinated with groundwater. As an undergraduate at Ohio State, he developed an awareness of how "vital" it is and an appreciation for its "incredible effects on demographics" while working summers as a hydrogeologic field assistant for the USGS.

Now a hydrogeologist with a B.S. and M.S. in civil engineering, Massmann's work puts him at the cutting edge of his field. No ivory tower academic, he worked part-time as a civil engineer while pursuing his master's and for a year full-time afterwards; then two years full-time as a hydrogeologist while he pursued his doctorate.

In 1987, the new Ph.D. joined the faculty of Michigan Tech. A year later, his work in hydrogeology was recognized with a Presidential Young Investigator award.

(PYIs receive $25,000 a year for their projects. If they can locate an annual $37,500 in industrial support the NSF matches it for a total of $100,000 a year.)

Ever since he arrived in C-U in June, Massmann has been camping out in a cramped little basement office until the builders finish with his lab.

"A major project this summer is to get my window opened," he began with a grin.

Born in Deshler, Ohio (pop. 2000), he's one of seven children. As the middle child, Massmann sees himself as "well-adjusted."

Perhaps his family background and his work in the "real world" have allowed him to achieve such a good balance between the practical concerns of the civil engineer and the more open-ended mindset of the geologist. Massmann, who is both, understands both, and he uses the best qualities of each to try to solve groundwater problems.

What Massmann does is generate computer models that simulate groundwater flow and combine those with probabilistic models that simulate uncertain geological environments. His purpose is to help management make better decisions about handling the environment.

A case in point is Massmann's work for Martin Marietta, who run the Oak Ridge National Laboratory. The company is the most recent sponsor for his PYI award.

How much is enough?

For Martin Marietta, Massmann is generating computer models to help them locate a disposal facility for low-level radioactive materials. His information will form part of their environmental impact statement.

"Martin Marietta wanted to build a facility, but management required them to characterize the hydrogeology of the site beforehand," he said.

"They put in monitoring wells, collected a tremendous amount of data, and predicted the flow of groundwater. But when they dropped dye into the aquifer to test their assumptions, they were off by 45 degrees in the flow direction and off by ten times on the magnitude of flow rate—it was ten times faster than they expected.

"One of the questions they've asked us is, 'If you can't do it with *that* much data, then how much data do you need to characterize a site?'

"On a given site," he went on, "there are a thousand possible geologies. The exciting part is generating a synthetic geology that makes some sense."

He paused, and looked divided. "You can argue against geologists here. If you have $10 million to spend on a site, would it be better to spend the whole amount on the best possible construction and design?

"Or is it better to spend $5 million characterizing the site and $5 million actually building it?"

"On the one hand you have the engineer. Engineers want to solve problems. In training you are given problems with a 'right' answer that you put in a box. For geologists there is no one answer. Geologists want knowledge. They'll go on and on."

How to resolve this dilemma? "The interesting thing to me," he said, "is the personalities and the politics. It's important to have both groups on these projects, and what these models are trying to do is to bring together the geologist and the engineer. Their approaches are different, their thought processes are different, but both are united for the same purpose."

Foresight and hindsight

In the case of Oak Ridge, management is aware of the potential problems to the aquifer a disposal site may cause. In many cases, however, damage has inadvertently been done. The work Massmann is doing at the Savannah River nuclear power plant in North Carolina illustrates another category of questions he's grappling with.

For Westinghouse, Massmann is constructing a model to be used to clean up an aquifer contaminated with tritium—low-level radioactive waste with a half-life of twelve years. The tritium was dumped into unlined evaporation ponds, and the contaminant seeped down through the sandy bed into the aquifer.

"They'd put a cap where the ponds used to be," he said, "but the cap was very expensive. One question we are looking at is, 'Was it worth doing it?' We are also looking at different strategies for cleanup. For example, if we pump out the contaminants, how many wells will we need? Right now they have lots of monitoring wells up there."

The Department of Energy provides Massmann with geologic and groundwater data that he incorporates in his flow models. This is a relatively straightforward process—software for flow models, he says, can be had "off the shelf." A number of people across the country are also combining flow models with probabilistic models, but to this Massmann adds two new "twists": he includes more geology in the models and he designs them as management tools.

Canadian beginnings

Massmann's work with probabilistic models began at the University of British Columbia in 1983, when he enrolled on a fellowship to work with Alan Freeze.

"Freeze was into numerical modeling of groundwater flow—using computers to simulate the behavior of aquifers and using those models to simulate the speed and movement of contaminants," he recalled.

On a three-year project funded by the Canadian government, Massmann assisted Freeze with modeling risk assessment and designing the data collection and monitoring networks for waste management sites.

On a given site there are a thousand possible geologies. The exciting part is generating a synthetic geology that makes sense.

His first independent experience with design, however, came with his dissertation on groundwater contamination from waste management sites, a study of the interaction between risk-based engineering design and regulatory policy.

"This spawned a lot of interest," he says, and several papers soon followed. One is puckishly entitled "Some uncertainties about uncertainties."

In 1987, the new Ph.D. moved to Michigan Tech as assistant professor, and the following year he received his Young Investigator Award.

The future is now

Joel Massmann met Craig Bethke shortly after he received his award. Massmann, who respects his fellow PYI as a first-rate scientist, also knew of Illinois' long involvement in hydrogeology.

"The first course in hydrogeology was taught at Illinois in 1963," he said, "but courses concerned with groundwater had been given for many years before that. Many of the 'big names' in hydrogeology have been associated in some manner with the U of I."

All of this made Massmann open to a move to Illinois when the department's offer came—an offer that also affords him the opportunity to try to apply probabilistic models to the oil business.

"One of my students is working for Shell this summer, and he's interested in doing that," says Massmann.

For oil, the flow and geology models will of necessity be different. The goal there would be to construct management models that show, among other things, the number of production wells and test wells.

In uncertainty modeling, however, Massmann thinks that the oil industry is ahead of him.

"A lot, I am sure, has already been done in oil, and the problem is getting these people to apply their models to groundwater problems."

Given his background, it is inevitable that Massmann will involve himself in two departments. Besides working with Bethke in Geology, he'll work with Al Valochi and Weyland Erheart in Civil Engineering. They'll be combining flow models with geologic models to design monitoring networks around landfills and contaminated sites.

Massmann gets a positive feeling from being involved in projects like these. "At least we are cleaning something up in the environment," he said.

Brian Skinner has characterized the next hundred years as ones where geologists will focus on consequences: "It will be a time of astonishing technological refinement driven by a concern about energy supplies. . . . Insightful management will be the way of the future."

At UIUC, with the addition of Joel Massmann to the faculty, the future has already arrived.

Profile: Brian Phillips

ASKING THE RIGHT QUESTIONS

One of the charms of the Natural History Building to remain unsullied in the remodeling process is the peculiar numbering system on its doors that answers to a fuzzy logic all of its own. When you try to reach Brian Phillips's office in room 334, you find that it is not on the second floor (where 300s happily coexist with 200s) nor is it on the third (where the 400s are). Only *after* you enter an unmarked door on the half-flight of stairs between the two floors do you find a sign directing you to 334. This is the "mezzanine," a floor between floors on which several small offices are sandwiched, almost as an afterthought.

Phillips's office, which he shares with Rob Lander, is cluttered and cozy. It is saved from claustrophobia by a window that overlooks the green sweep of the quad. He likes this out-of-the-way spot, one that seems to reflect his own self-contained and self-sufficient personality. It's a quiet space where his imagination can range as he visualizes the structure of minerals as they lay deep within the earth. For Phillips, "the really interesting things happen down below."

Transitions

Six years ago, however, when he graduated from Bowling Green State, Phillips had no idea that this is what he would be doing with his life. "I was really tired of school," he recalls. "I had a job, a girlfriend, and was playing guitar in a 'raw' rock-and-roll band. Then Jim Kirkpatrick called me up and asked me if I was serious about coming to Illinois."

"Brian was a good candidate," said Kirkpatrick. "He had excellent grades, the right courses, high GRE's—" To convince him that Illinois was the best place to be, Kirkpatrick offered the Phi Beta Kappa a fellowship and a teaching assistantship, and in the fall of 1984 Phillips joined the ranks of Illini.

"Jim gave me a box of rocks"

Phillips's field is mineralogy. "The catchphrase these days is 'mineral physics'—solid state chemistry and physics applied to minerals," he says. For the past few years he has been studying phase transitions. "It's a small community—only a few dozen people—and very specialized."

Phillips was introduced to his specialty by his advisor, Kirkpatrick.

"We had this new technique, applying NMR (Nuclear Magnetic Resonance) spectroscopy to solids," said Phillips. "NMR applied to mineral science is a new field since the '80s and only three or four places in earth sciences were doing this."

Phillips uses NMR to study the structure and thermodynamic behavior of minerals and their phase transitions—spontaneous, reversible changes of atomic structure brought about by a change of temperature. His goal is to discover how their stable configurations change with changing external conditions of pressure and temperature.

"Since the beginning of the century scientists have known that transitions took place in minerals," says Kirkpatrick, "but the transitions were considered fairly simple. We've only begun to realize in the last ten years that they can affect thermodynamic properties in important and complex ways." X-ray diffraction provides limited and inconclusive information about local atomic arrangements, but with NMR

spectroscopy, the complex nature of these transitions is beginning to reveal itself. "But," cautions Kirkpatrick, "we are still in the early stages of understanding how these take place."

Fruitful collaborations

Phillips sees Kirkpatrick not so much as a mentor but as a collaborator.

"Jim is very good at asking questions about the work I 'm doing and makes me think what's important," he says.

Their collaboration has been fruitful. With the support of a variety of National Science Foundation Grants and the facilities of the University's Laboratory for Supercomputing Hydrogeology, Phillips has published papers that provide new insights into Mg-rich vesuvianite (*American Mineralogist 72*:1190-95); Al, Si ordered alkalai feldspar series (*Physics and Chemistry of Minerals 16:* 261-75); and Si, Al ordering in leucite (*Physics and Chemistry of Minerals 16:* 591-98). He has also submitted a study of Si, Al ordering in natural and synthetic sapphirines to *American Mineralogist* and another, on synthetic An100 feldspars, is in preparation. His presentations include an informal paper delivered to a NATO Advanced Study Institute in Cambridge, England.

"Especially since Brian's got into his thesis work," says Kirkpatrick, "I've learned a lot from working with him."

Three with one blow

Phillips spent the month of July writing his thesis, a study of the phase transitions of Sr_2SiO_4 (strontium silicate), $AlPO_4$ (aluminum phosphate), and calcium feldspar (anorthite). All were chosen because they had known transitions and each will be published as a separate paper.

"Strontium silicate and aluminum phosphate are synthetic phases that we made in the laboratory. They are very similar to—and show the same behavior as—minerals, but are easier to study by NMR," says Phillips. The papers here deal with changes in their atomic structure.

Because of the much more complex nature of anorthite, however, Phillips studied a well-ordered sample as free as possible from iron. In NMR spectroscopy, Phillips explained, the nucleus of an atom acts like a radio transmitter/receiver. The sample is placed in a large magnet, then bombarded with electromagnetic radiation. The frequencies the nucleus absorbs and then transmits are governed by the arrangement of the atoms around the nucleus. Different atomic arrangements around the same element show up as different peaks.

NMR applied to mineral science is a new field since the '80s and only three or four places in earth sciences were doing this

"We then do this experiment at different temperatures and the changes we see in the spectra tell us how the structure is changing with temperature," he says.

Since the 1960s it has been known that at 240 degrees the number of Si-sites of a unit cell of anorthite become halved from 8 to 4 as pairs of Si-sites become equivalent. The structure becomes correspondingly more symmetrical.

"In the NMR study," says Phillips, "we actually see peaks corresponding to Si-sites, and see the pairs (of peaks) moving together, until at high temperature they are the same. Other studies of anorthite have measured the diffraction patterns (the way the phase scatters X-rays at low and high temperature) and deduce what is going on from those. We're actually able to see, specifically, what is happening on an atomic scale."

The pairing of Si-sites and the correspondingly more symmetrical configuration of anorthite at higher temperatures is just one of the transitions this complex mineral undergoes. Two others are the disordering of Al and Si on the framework sites and the substitution of Si+Na for Si+Ca.

Different teams of scientists are studying these transitions, and ultimately, says Phillips, mineralogists hope to be able to calculate the original temperature/pressure of any piece of feldspar to ascertain the conditions under which it was formed.

"Things couldn't have worked out better"

After finishing his thesis and taking his exams, Phillips joined his friend, Katherine Sugg, a Ph.D. student in comparative literature, in Avignon for a three-week holiday in France and England.

In the fall he returned to campus for a year of postdoctoral work, spending half his time in Geology and the other half working with Eric Oldfield in the chemistry department. His goal is to learn other techniques in chemistry that he can apply to the study of minerals. In a year's time, he sees himself as a researcher with another university or with some national research facility.

"In retrospect," says Phillips, "things couldn't have worked out better. The situation is perfect for me because of the world-class facilities, and because I am free to develop my own ideas. . . . But I still don't have a handle on what the important questions are—that takes the longest time to learn."

ALUMNI NEWS

The heart of *GeoSciences* is information about you yourselves. This material is gathered primarily from the reply forms and correspondence you send to the department, although some tidbits are provided by faculty and staff who have been in contact with you. This is the latest information we have about you.

Take Time to complete and return the reply form at the end of this section—your news is important to us. And please send pictures—they will be returned.

Let us know whenever your achievements are honored by sending us any press releases about you.

This section has been broken into decades. If you were affiliated with the Department of Geology from part of one decade and into another, you will be listed according to the last degree granted from UIUC.

Please note that the items appear in date order, and not in alphabetical order.

AAPG HONORS SCHNEIDERMANN

FOR HIS LEADERSHIP roles in enhancing international cooperation, worldwide professionalism, and knowlledge of Geology, the AAPG honored Nahum Schneidermann (Ph.D. 72) with its Distinguished Service Award at its annual conference last June.

"Nahum excels in bringing workers together in challenging, effective, congenial settings," wrote Roger G. Alexander Jr. "His leadership and interest in people are extraordinary." Schneidermann was born in Zoyadan, Uzbekistan, U.S.S.R., in 1943. When he was three years old, his family emigrated to Poland, and in 1959, when he was sixteen, they moved once more to Israel. He earned both his B.S. and M.S. degree in Geology from the Hebrew University in Jerusalem. In 1969, Schneidermann came to Illinois. After earning his Ph.D. from UIUC in 1972, he taught marine geology for two years at the University of Puerto Rico.

Two years later, Schneidermann joined Gulf Oil Corporation, moving to Chevron Overseas Petroleum in 1985. While he was initially involved with domestic geology, he soon moved to increasingly international work.

Since 1976 Schneidermann has served, in series or in tandem, on a number of important AAPC committees. This past year he served as Technical Program Coordinator of the Conference.

QUIRKE RETIREMENT

TERENCE T. QUIRKE, JR. (B.S. 51), whose father was chair of the Geology Department from 1919–28, retired from ACNC (American Copper & Nickel Co.) last June after thirty years. ACNC is the U.S. exploration subsidiary of INCO Ltd., the world's foremost producer of nickel.

After earning his M.S. and Ph.D. in economic geology from the University of Minnesota, Quirke spent two years as assistant professor at the University of North Dakota, Grand Forks, then moved with his wife Ruth, and daughter, Anne, to Thompson to join INCO as senior field geologist. By 1972, Quirke was regional manager of exploration in charge of all INCO explorations west of the Red River and North of the 49th parallel to the pole.

In 1975, Quirke moved to Milwaukee to assist in the start-up of ACNC and to take charge of all exploration east of the Mississippi. In 1979, he moved to ACNCs regional headquarters in Denver to become supervising senior staff geologist. Among his responsibilities were initiating and supervising all computer

applications for the company. Quirke and his wife Ruth plan to remain in their home (which Ruth designed) in Genessee, just west of Denver in the foothills of the Rockies. They look forward to continuing their genealogical reseach. Quirke has recently published a book on his mother's family (McIlraith) and thinks that if he'd spelled the subject properly on his university entrance forms, he probably would have been a genealogist, instead of a geologist.

Quirke's advisor at UCIC was C.A. Chapman. He was member of the Men's Glee Club and Alpha Kappa Lambda fraternity.

THIRTIES

After **Sidney E. Ekblaw** (A.B. 29, M.S. 30) earned his doctorate from Clark University in 1934, he joined the University of Kansas City (later the University of Missouri, Kansas City). From 1942–48 he was Chair of the Department of Geology, and retired in 1970. "Although 86," he writes, "I am still interested in the crust and face of the earth.

"Younger alumni might be interested to know that the Canadian Geological Survey named a quadrangle after **W. Elmer Ekblaw**, (A.B. 10, A.M. 12). He was a geologist and botanist with the Crockerland Expedition to the Arctic in 1913–17, and carried on explorations on the eastern side of Ellesmere Island. The glacier named after him lies to the west of Smith Sound. The SE corner of the quad, known as Ekblaw Glacier, is 78°00'N and 74°00'W."

FORTIES

From January to June, **Allen** and Frances **Agnew** (A.B. 40, M.S. 42,) toured the U.S. in their motor home. I saw **Bob Dietz** (A.B. 37, M.S. 39, Ph.D. 41) in Tempe back in February, and he's busy cranking out good stuff. I'm retired!"

FIFTIES

John Shelton (M.S. 51) spent the first ten years after his graduation with Shell, and the next twenty years on the faculty of Oklahoma State University. For the past seven years he has worked with a consulting group in Tulsa, Oklahoma.

Robert B. Johnson (Ph.D. 54) is Professor of Geology Emeritus at the Department of Earth Resources, Colorado State University. He retired in 1988 following 21 years on the faculty, including one term as department chairman and two years as acting department head. He is the senior coauthor of *Principles of Engineering Geology* (Wiley, 1988). Johnson plans to remain in Fort Collins doing occasional consulting in engineering geology and geophysics.

"Our hobbies continue to be mountain wildflower photography, histories of our mountain mining communities as shown by cemetery headstone styles, computer applications in geology, travel, slide presentations, teaching specialty courses at CSU as needed, and in general, enjoying life!"

My regards to Dr. Carozzi, a great teacher.

—Charles Ruble (B.S. 57)

Since retiring from the USPHS Indian Health Service in 1987, **George T. Fries** (B.S. 52) has worked part-time for architectural firms as project manager for building construction.

In 1951–52 Fries worked with Jack Leuin Hough plotting the contour of the bottom of the Great Lakes. "That work probably showed up in Jack's prize-winning book, *The Geology of the Great Lakes.*"

Russell B. Lennon (M.S. 57), a senior staff geological engineer with Shell Oil, is developing gas fields in south Texas. He recently finished a teaching assignment in Shell's training schools, and continues to teach in the University of Houston's graduate petroleum engineering program. "I'm looking forward to retirement, probably this year."

Charles L. Ruble (B.S. 57) has retired from Amoco Corporation after working as a petroleum geologist for 29 years--24 of which were spent abroad.

Geothrust chairman **Alan J. Scott** (B.S. 55, Ph.D. 58) resigned from RPI in order to join with two partners in building a new consulting group, CGS in Boulder, Colorado.

Carl G. Davis (B.S. 59) writes that "My students like fossils, minerals, stars and constellations, and volcanoes. They dislike topographic maps, any formulas, and any math." Davis, who earned an M.S. from Northern Illinois University in 1969 , teaches earth science, geology, chemistry, and physical science at Danville Area Community College.

Davis's daughter, Elizabeth, will enter high school this year.

Bruce E. Dollahan (B.S. 59), a regional merchandise manager for Sears, is now semi-retired. He has worked for Sears for 29 years. *(Thanks for getting in touch—we've crossed you off the "lost" list. -Ed.)*

David L. Sturn (B.S. 59) visited the Geology Department at Spring Break. He was in town to pick up his son, who is studying aeronautical engineering here.

SIXTIES

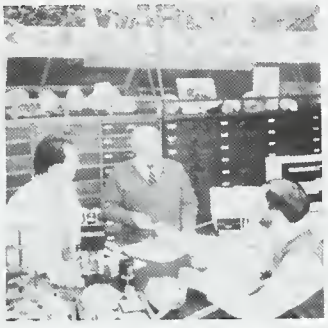
Robert F. Lundin (M.S. 61, Ph.D. 62) is Professor of Geology at Arizona State University, Tempe. He is continuing studies of Ostracoda from the Silurian of Gotland and England. "[I am also] coordinating the revision of the Ostracoda volume of the *Treatise on Invertebrate Paleontology*, which my mentor Harold W. Scott coordinated in the late 1950s and early 1960s."

John D. Sims (B.S. 63) earned his M.S. at the University of Cincinnati in 1965 and his Ph.D. from Northwestern University in 1967. A project chief for the USGS, Sims is studying neotectonics and post-Oligocene evolution of the San Andreas fault in central California. As a follow-up to the October, 1989, Loma Prieta earthquake, he is also studying the history of paleoliquefaction events on the Loma Prieta segment of the San Andreas fault.

Sims is a member of the USGS Parkfield Earthquake Prediction

Experiment working group and author of a major paper, "Chronology of displacement on the San Andreas fault in central California: Evidence from reversed positions of exotic rock bodies near Parkfield, California."

"I recently hosted a Japanese colleague from Tokyo University for one year, during which time we conducted research on Holocene slip rates of the San Andreas fault on the Carrizo Plain, California."



On the 1990–91 cover of Ward's Geology, **Neal O'Brien** (M.S. 61, Ph.D. 63) discusses the computer software he helped develop for teaching about the rock cycle with **John Fox** (M.S. 87), Ward's mineralogist (left), and Steve Bryson, Ward's Director of Geology. O'Brien is professor of Geology at Potsdam College, SUNY. In 1987 he received the prestigious Potsdam College President's Award for excellence in research and creative endeavors.

Alan G. Goodfield (M.S. 63, Ph.D. 65), engineering geologist for the Illinois Department of Transportation, prepares foundation treatment recommendations and reviews consultants' treatments for all in-house designs of bridges and culverts and many retaining walls. He examines all primary bridges and many local road projects.

"As the only geologist in the bureau, I serve as the geological reference. In addition to structure foundations, I also work with mine subsidence and earthquake design aspects."

Goodfield married Shari Thulin, a claims adjuster for the Illinois State Medical Society, in 1984. Their daughters are 13 and 19 years old.

Daniel A. Textoris (Ph.D. 63), professor of Geology at the University of North Carolina, is occupied with full-time teaching and research (mainly petrographic studies on sedimentary rocks).

Textoris is also involved in applied geology of site selection of low-level radioactive waste, and has been doing "lots of research on Triassic basins of the eastern United States." In 1989, he gave a talk on his Triassic basin research to the 28th International Geological Congress in Washington, D.C.

On research leave in Fall, 1989, Textoris spent considerable time evaluating the earth science programs in the Florida university system, then worked on geoarchaeology in Greece.

"I also had the pleasure and honor of giving the keynote address at the Albert Carozzi retirement dinner at the GSA in St. Louis."

Bruce M. (Chip) Nichols (B.S. 68) earned an M.S. from the University of Washington (Seattle). He is an independent consultant and an investor in the Australian mining industry.

"We may be returning to the United States after having been in Australia for twenty years!"

SEVENTIES

Allan Schmidt (B.S. 70) received his M.S. from the University of Florida in 1972. For the past six years he has been employed by Geraghty & Miller, Midland, Texas, as a senior geologist/project manager with special emphasis on environmental, ground water, and hydrocarbon services.

Schmidt has been married for 17 years. He and his wife Cindy have a seven-year-old daughter, Susan.

William B. Size (Ph.D. 71) is director of the Geosciences program at Emory University in Atlanta. He was in New Zealand until August on sabbatical leave, working on two large granitic complexes located in the fold belt of the southern Alps on the South Island. His project was sponsored by The New Zealand Geological Survey.

Chuck Hedel (B.A. 73) researched tectonics and active faulting for the USGS in Menlo Park, California, for seven years after graduating from UIUC. After receiving his M.S. from San Jose State in 1980, he joined CHAM HILL's Portland, Oregon, office as an engineering geologist. Hedel provides geological input leading to the design of industrial and municipal civil engineering projects, and also manages remedial investigations of hazardous waste sites.

Best regards to Phil Sandberg, Art Hagner, and Hilton Johnson."

—Chip Nichols (68)

Margaret Watson Rutledge (B.S. 74) earned her M.S. in scientific and engineering management from West Coast University. She is treasurer-manager of financial services for Mesa Consolidated Water District in Costa Mesa, California, responsible for customer service, accounting, data processing and long-range planning.

"My technical degree has been a critical part of my success in management. I have instant credibility with technical types, who abound in the water business."

Rutledge's son Andrew is three years old, and her husband Jim is a tenured professor at the University of California at Irvine.

David Rich (M.S. 77, Ph.D. 80) is still owner of Geotech Computer Systems, now up to seven

employees, selling computer products and services for the earth sciences. "We are expanding into more environmental applications and selling more internationally."

EIGHTIES

Christopher A. Kotlarz (B.S. 80) is a systems engineer with EDS Corporation, Plano, Texas, "supporting Sacramento Savings and Loan Association through EDS' integrated financial systems (IFS)."

Kotlarz recently joined the corporation after an eight-year career as a naval flight officer flying the P-3C Orion aircraft. "Even though I haven't worked in the geology field, I believe my geology degree has given me a 'macro' understanding of the world and business, and superior analytical skills necessary for success."

Hi Pat Lane! Hi to Jack Pullen. I wish I chould have stopped back to see him before retirement.

—Jim Miner (B.S. 87)

John L. Shepard (M.S. 80) is still a senior project geologist with Shell Oil, but was transferred from Houston to New Orleans in late 1989.

Theodor (Ted) W. Hopkins (B.S. 81) is a geologist with Shannon & Wilson, Inc., a soils engineering firm in Seattle. "There are a lot of U of I alums there," he writes, "but all from civil engineering."

Hopkins, who recently visited the department while he was on campus on business, has been married for four years to Diane Wilkins, a software engineer with Boeing. They met at Texas A&M University, where he completed a Master's in geology.

David Wear (B.S. 81) lives in Evergreen Park, Illinois. He earned his MBA in 1989 from the University of Illinois at Chicago, and is a systems analyst at People's Energy Corporation.

Snehal S. Bhagat (B.S. 84) is working for the Environmental Geology Industry in Chicago. His Master's thesis was published in the *Journal of Structural Geology*, v. 12.

Heidi Hoffmann Humphrey (B.S. Commerce 82, B.S. Geology 84) is enjoying the travel associated with her work as a hydrogeologist with CHAM HILL in Oregon. She works predominately on groundwater remediation on hazardous waste sites, and is also an Oregon-registered geologist.

Humphrey, who was married in 1989, received her M.S. in geology and civil engineering from Oregon State this year. She and her husband Mark have bought a house out in the country. "[We] have a dog and a cat but no kids—yet. I love it here in Oregon."

David N. Moore (B.S. 82), a refractories analyst at Flow-Con Systems in Champaign, is responsible for new product, process, and procedure development for refractories used in the steel industry.

Moore and his wife Ella have two sons, Jason (7) and Jacob (4).

John R. Tabor (B.S. 83) received his Ph.D. from the University of Minnesota in 1988 and recently accepted a position with Shell Oil Swepi, in Houston, Texas.

Previously, as a postdoctoral research associate under Dr. Robert D. Hatcher at the University of Tennessee, Tabor worked on the structural geology and tectonics of the crystalline southern Appalachians.

Stephen Bouchard (A.B. 84) received his M.S. from UIC in 1988. He is a permit writer for facilities managing hazardous waste in the state of Ohio for the U.S. Environmental Protection Agency.

Valla Jones Earl (B.S. 1984) became parent of Jonathan David Earl on May 21, 1990. Jonathan weighed 6lb., 9oz., and was 19" long.

"More pictures and current information on other alumni would be great."

—Christopher A. Kotlarz (B.S. 80)

Rachel Carlin (B.A. 85) earned her M.S. from Portland State University (Oregon) in 1988. Her thesis was "A geochemical study of the Eagle Creek formation [volcanic mudflows] in the Columbia River Gorge, Oregon."

Carlin is enrolled in the D.Env. program in environmental science and engineering at UCLA. She also works part-time for the Toxic Substances Control Program of the California Department of Health Services, regulating hazardous waste treatment, storage, and disposal ("i.e., enforcing RCRA"). She'll continue full-time in January 1991 as part of the two-year internship required to earn her degree.

In September, 1991, Carlin plans to be married to Kevin Segal, a math Ph.D. student whom she met at UCLA.

Karen H. Fryer (M.S. 82, Ph.D. 86) is now Professor of Geology at Ohio Wesleyan University.

Steve Laubach (M.S. 83, Ph.D. 86) is at the Texas Bureau of Economic Geology, publishing prolifically, and on his way to becoming a nationally recognized expert in microfracture.

Nancye Dawers (M.S. 87) has been a research scientist at Lamont-Doherty and plans to start her Ph.D. soon.

Mark Fischer (B.S. 87) is now pursuing his Ph.D. in structural geology at Penn State. He recently presented a paper on his work in fold-thrust tectonics to a meeting in London.

Jim Miner (B.S. 87), who earned his M.S. from Northern Illinois University in 1989, is now enrolled in their doctoral program. "Although it may be too early to tell, I think I can resist the urge for a salary long enough to finish the program. Winter work on Lake Michigan (for both Master's and Ph.D.) is especially beautiful, but very cold!"

Karl Newman (B.S. 87) is currently division manager of environmental services for Professional Service Industries, Inc., in Champaign. He works with environmental site assessments, monitoring well installation, contamination assessment, modeling, and remediation.

Newman is finishing his thesis on "Sequence stratigraphy of the Campanian Panther Tongue sandstone member of Star Point formation, Book Cliffs, Utah" with Dr. Margie Chan and expects his M.S. (University of Utah) in 1991. He is married to Jackie Nietfeldt, a 1990 UIUC graduate in Applied Life Sciences, and they were expecting their first child in April.

Terrie Adams (M.S. 89) and **Steve Adams** (B.S. 82, M.S.86) welcomed Betsey Lew Adams into their family on April 26, 1990. Betsey is their first child.

Terrie is an environmental geologist with the Illinois State Geological Survey in Chicago, and Steve teaches high school science at St. Charles High School in St. Charles, Illinois.

Gang Lu (M.S. 89) is pursuing his Ph.D. at Louisiana State University in paleomagnetics. His Master's thesis will appear shortly in *Earth and Planetary Science Letter. (See Contents page, cover caption for more on Gang Lu's research.–Ed.)*

NINETIES

James A. Cremeens (M.S. 90) is an engineering geologist with Chen-Northern, Inc., in Denver.

"I have a house on four acres up in the mountains southwest of Denver. The job is interesting and keeps me very busy. What else could you ask for?"

Andrew (Andy) Finley (B.S. 90) and **Sandra (Marquez) Finley** (B.S. 88) became parents to their first child, Elena, in July. The Finleys have moved from California to Laramie, Wyoming, so that Andy can begin graduate school at the University of Wyoming in the fall.

CONDOLENCES

I returned, and saw under the sun, that the race is not to the swift, nor the battle to the strong, neither yet bread to the wise, nor yet riches to men of understanding, nor yet favor to men of skill; but time and chance happeneth to them all.

—Ecclesiastes

Norma Vergo Altaner

Norma Vergo, a talented geologist who combined her career with family life, died on January 28, 1990, from complications during her second pregnancy.

"Norma effused a verve and love for life that enveloped and affected all who were fortunate to know her," wrote Richard H. April of Colgate University. She graduated with honors from Colgate in 1981.

That fall, she entered the University of Illinois, a school she chose over the University of Massachusetts after hearing about it from Stephen Altaner. Steve was a Colgate graduate who was working toward his Ph.D. in clay mineralogy at Illinois.

In 1984, Norma completed her master's. In her thesis, "The wall rock alteration of the Bulldog Mountain mine in the Creede district in Colorado," she demonstrated a new approach to determine reaction time in a hydrothermal system. In that happy and eventful year, she and Steve married, and moved to Reston, Virginia, to work at the U.S. Geological Survey. There, she collaborated with a group interested in mapping the mineralogy and lithology of the earth's surface using visible-to-infrared spectra obtained remotely by satellite.

"Norma's background in clay mineralogy made her an important asset to a group that was previously lacking in mineralogical expertise," wrote David M. Sherman of the USGS. "In her few years," he continued, "she touched the lives of many colleagues and became dearly loved and respected by those who knew her."

In 1985, Norma and Steve accepted positions in the Geology Department at Illinois, where Norma continued her research.

Norma published twelve papers. Her latest, with R. N. Clark et al., is "High resolution reflectance spectra of minerals," *Journal of Geophysical Research.* It is in press.

Norma's friends and colleagues at Colgate University have established the Norma Vergo Prize in Geology. The prize will be awarded each year to a geology major who, like Norma, significantly contributes to the spirit of excellence among fellow students in the department.

Here in Illinois, the mothers and children of the playgroup to which Norma and her son belonged are donating children's books in her name to the Champaign Public Library. In Robeson Park near her home, trees have been planted in her memory.

She is survived by her husband, Professor Stephen Altaner, and their two-year-old son, Sam.

Norma was thirty years old.

George Cohee

George Cohee (B.S. 31, M.S. 32, Ph.D. 37), a very strong supporter among our alumni and an influential geologist in the USGS, died on December 29, 1990.

"George was one of the most widely known, respected, and loved geologists of his generation," writes Ralph Miller. "His sunny, friendly, unassuming personality endeared him to his associates inside and outside the USGS."

In 1933, while earning his master's, Cohee worked part-time for the Illinois Geological Survey, then joined it full-time in 1936. From there he moved to the Indiana Geological Survey as Assistant State Geologist, principally involved in petroleum studies. In 1942, when the world was at war and petroleum supplies were of strategic concern, he moved to the USGS in Washington, D.C.

During his early years with the USGS, Cohee worked on regional subsurface geology in the Michigan Basin. While in Michigan, he authored 22 publications, including a number of oil and gas maps and charts. In 1950, he moved to the University of Arkansas as Chairman of the Department of Geology. Two years later, he rejoined the USGS as chairman of the Geologic Names Committee and chief of the Review Staff. He headed that committee for 25 years until his retirement in 1977. Similarly, Cohee chaired an AAPG committee that developed a system of computerizing stratigraphic data from oil wells. This system, available to oil companies and others, is installed at the University of Oklahoma.

Principally a stratigrapher, Cohee represented the USGS as member or as chairman of the North American Stratigraphic Commission for many years.

Harold Scott explains the work of that commission:: "Every rock in America has a name. Some names are duplicated in different states; some are not properly identified. The comittee tried to straighten this out."

For the AAPG Cohee served on 20 commmittees (chairing four of them); represented that organization on four boards; was an associate editor for five years; and served as Secretary-Treasurer for two years. He has received Distinguished Service Awards from the Department of the Interior and the American Association of Petroleum Geologists.

"I knew George Cohee very well," said Harold Scott. "In the Fall of 1931, we were graduate students together. I saw George annually at many of the AAPG and GSA meetings and considered him a very good friend.

"George was admired and respected by all geologists who on knew him. He was above political disputes, and had an admirable personality that enabeled him to get along with everybody. He was one of the most likeable fellows I have ever known."

Writes Ralph Miller, "there were three great loves in George's life: his wife Vera, the USGS and the AAPG. . . . Those who were his friends are richer for having known him."

George Cohee was 83.

Adolf Pabst

Adolf Pabst (A.B. 25), an expert n rare minerals and former professor at the University of California at Berkeley, died in Berkeley on April 3, 1990.

Pabst taught mineralogy at U.C. Berkeley for forty years, and had remained active since his retirement in 1967. He continued his research in mineralogy and X-ray crystallography and lectured frequently. As rrecently as February, he walked from his Berkeley home to his office.

Professor Pabst's research earned him the Roebling Medal of the Mineralogical Society of America, the group's highest honor. He served as the Society's president in 1951.

A specialist in crystal deformation, he was the author of obout 100 scientific papers. In 1965, a new mineral was described and named *Pabstite* in recognition of his work

Born in Chicago, Pabst received his bachelor's degree from the University of Illinois and his Ph.D. from Berkeley. He joined the Berkeley faculty as a lecturer in 1927 and bedame full professor in 1944.

He is survived by his brother Edmund G. Pabst of Evanston, Ill., and his sister Imma Tweed of Elgin, Ill.

Reprinted from the San Francisco Chronicle.

HELP US FIND YOUR "LOST" CLASSMATES

Since the publication of our last newsletter, eighteen alumni have been "found." In preparation for a future directory of gology alumni, we will continue to print an updated listing of "missing" graduates. If you know the whereabouts of any of these individuals, please drop a note to Pat Lane, department secretary.

Adams, Budd B.
Adamson, Bruce R.
Aller, Alan
Allman, David William
Allsop, Ernie D.
Anderson, Leslie Grove
Anderson, Sumner M.
Babet, Pauline
Balsamo, Jeannine
Barnard, Evyn G.
Beals, Richard B.
Beeler, Vivian Jr.
Bird, Allan G.
Lowell, R. Bostrom
Brackin, William P.
Brennecke, Steven M.
Brownlee, Mary E.
Buck, Edward F.
Butler, Craig E.
Butler, Louis W. II
Callahan, Jean McGinnis
Carius, Terry L.
Carr, Peter Alexander
Carss, Brian Williams
Chargo, Sheryl A.
Chase, Livingston
Church, Russell J.
Cole, Sally A.
Dean, James W.
Debrito, Sergio Na
Delimata, John James
Denaray, Andrew T. Jr.
Dickie, George A.
Dodge, Harlan Bernard
Dorn, Eugene Geral
Erickson, Michael J.
Erickson, Wesley Tyler
Fanning, John Wood
Dulekoz, Erhan
Farnum, Jeanne Seaman
Fears, James Norman
Feray, Dan Edwards
Fiello, Susan M. Camp
Figueiredo-Filho, Paulo M.
Foreman, Larry S.
Fosser, Timothy Devine
Frost, Stanley Harold
Fulmer, Mark Theodore
Fulton, Linda Provo
Gatsis, George J.
Gawne, Constance Elaine
Gleim, Douglas
Glowack, Michael Edward
Goodin, James Edward
Grove, Kurt A.
Hahn, Peter L.
Hamdan, Latif Said
Harp, Susan P.
Harper, Denver
Herring, Louis Schulz
Howard, James Roy
Kagami, William
Kaprali, Atilla U.
Kern, Fred Jr.
Kiwiet, Elsa M.
Knapp, William J.
Knoll, Alfred George
Kochinski, Donald Carl
Kuhn, Anthony C.
Kummer, John Thomas
Lamport, Michael B.
Larson, George Ralph
Linka, Robert A.
Lucas-Salgado, Teresa L.
Ma, Tso-An
Mack, David Walter,
Malan, Roger Conway
Maruri, Raul D.
Maurer, Donald Leo
Maycotte, Jorge I.
McGovern, Elmo James Jr.
McMackin, Samuel Carl
McMahon, Michael G.
Meyers, Albert Lawrence
Moore, Michael Charles
Moyer, Faris Knoble
Napoleoni, Lynn L.
Naruishi, Joseph Ichiro
Near, Wilbur Fayette Jr.
Nelson, Mark Denny
Nicholson, Marylinn
Noll, Donald Eugene
Nowak, Frank John
O'Neil, Kathleen M.
Page, Kenneth Gene
Painter, Robert L.
Pearce, Dwight
Philbin, Patrick T.
Plain, Ruth Violet Roselle
Ramberg, Donald Robert
Ridley, Richard B.
Rogers, John Robert
Root, Robert W.
Rosecrans, Jack J. Jr.
Schenck, Leslie R.
Shayani, Sohrab
Sheppard, Kenneth Ray
Shirley, Fred R.
Shorter, Joan Caperton
Shrode, Raymond
Siddhanta, Sushil Kumar
Skrzyniecki, Alan F.
Slovinsky, Raymond Leroy
Soley, Earl Lloyd, Jr.
Sorrell, Charles Arnold
Spitzer, Roy H.
Sprouse, Donald West
Srilenawat, Rakchai
Stewart, Thomas R.
Stone, Kenneth Allen
Sugahara, Hayashi
Susong, Bruce Irvin
Szumal, Robert J.
Tills, Linda A.
Trummel, John E.
Urbano, Robert Francis
Vega, Richard L.
Vincent, Arthur Lee
Vinyard, Carl Wayne
Vukovich, John William
Waggoner, Beulah M.
Weber, Margaret M. Pendleton
Weidner, Melvin Irenaeus
Welch, William Charles
Wildanger, Edward G.
Wood, Larry Don
Wrath, William Frederick
Yochem, Ronald Jacob
Ziebell, Warren Gilbert

Faculty

Stephen P. Altaner, associate professor
David E. Anderson, professor
Thomas F. Anderson, professor
Jay D. Bass, associate professor
Craig M. Bethke, associate professor
Daniel B. Blake, professor
Chu-Yung Chen, assistant professor
Wang-Ping Chen, associate professor
Timothy.L. Clarke, assistant professor
Richard L. Hay, Ralph E. Grim Professor
Albert T. Hsui, associate professor
W. Hilton Johnson, professor
R. James Kirkpatrick, professor/dept. head
George deVries Klein, professor
Joan Kluessendorf, research associate
Ralph L. Langenheim Jr., professor
C. John Mann, professor
Stephen Marshak, associate professor
Joel W. Massmann, associate professor
Peter A. Michalove, assistant to dept. head
Alberto S. Nieto, professor
Charles Norris, research associate
Lois M. Pausch, acting librarian
Philip A. Sandberg, professor

Adjunct/Emeritus Faculty

Albert V. Carozzi, emeritus
Keros Cartwright, adjunct/ISGS
Carleton A. Chapman, emeritus
J. James Eidel, adjunct/ISGS
Leon R. Follmer, adjunct/ISGS
Donald L. Graf, emeritus
Arthur F. Hagner, emeritus
Donald M. Henderson, emeritus
Morris W. Leighton, adjunct/ISGS
T.L. Phillips, professor (with plant biology)
Robert Reynolds, adjunct/professor
Harold W. Scott, emeritus

Nonacademic Staff

LuAnn P. Cliff-Crooks, clerk typist III
Jean E. Daly, staff clerk
Murle Edwards, chief clerk
Barbara Elmore, transcribing secretary
Jessie Knox, cartographer
Eddie Lane, electronics engineering assistant
Patricia Lane, administrative secretary
Marsha Powell, account technician I
Mary Ann Quinn, library clerk II
Alice Reed, library clerk II
Diana L. Walter, library technical assistant II

Graduate Students

Istvan Barany, ISGS
Ten-Hung Chu, TA
Xian-Dong Cong, RA
Tom Corbet
Brandon Curry, ISGS
Eric Daniels, fellow
Mary Ann Glennon, RA
Georg Gratoff, TA
David Grimley, TA
Junpeng Guo
Steve Hageman, RA
Eric Holdener, TA
Sharon Horstman, TA
Hue-Hwa Hwang, ISGS
Honn Kao, TA
Yeongkyoo Kim,RA
Jennifer Kupperman, TA/USGS
Rob Lander, RA
Kurt Larson, fellow
Ming-Kuo Lee, RA
Wan Bing Li, RA
Junzhe Liu, RA
Jay Matthews, RA
Karen Murphy, RA
Joseph Quinnan, RA
Christopher Roemmele, TA
Kelly Rust, RA
Fred Siewers, RA
Steven Sroka, TA
Nita Tolia, TA
David Voorhees, TA
Lili Wang, TA
Kim Weborg-Benson
John Werner, TA
M. Scott Wilkerson, fellow
Yuehui Xiao, RA
Woo-Sun Yang, RA
Yu-Lien Yeh, TA
Robert Ylagan, fellow
Nan Yu

Key
ISGS = Illinois State Geological Survey
ISWS = Illinois State Water Survey
RA = research assistant
TA = teaching assistant
USGS = United States Geological Survey

Please take a few moments to let us and your classmates know what you've been doing: promotions, publications, election to office, marriages, parenthood, moving, awards. We'd all like to hear from you!

Response date _____

Name _____

Address _____

_____

_____ Check here if this is a new address.

Degrees from Illinois (with year) _____

Degrees from other universities _____

_____

Present employer and brief job description _____

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Other news you would like to share _____

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Your comments on the alumni newsletter _____

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_____

Deadline for February 1991 newsletter: December 30, 1990

Place
Stamp
Here

Mary Daniels,
Editor, *GeoSciences*
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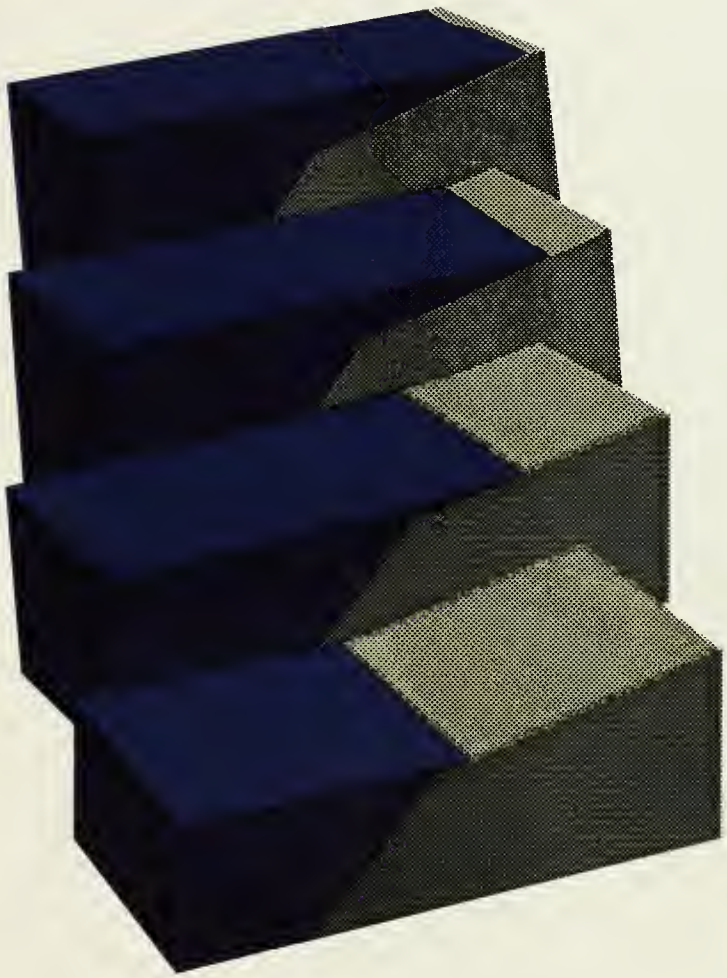
GeoSciences

Department of Geology
Alumni Newsletter
Spring '91



UNIVERSITY OF ILLINOIS

GeoSciences

Alumni Newsletter SPRING 1991

Cover Illustration: Four steps from an animation sequence showing transgression.The animation was generated by Professor Philip Sandberg in a three-dimensional modelling program on the Macintosh computer. This represents the first trial in the planned development of tutorial hypermedia modules for instruction in introductory general education geology courses.

GeoSciences is the Alumni newsletter for the Department of Geology, University of Illinois at Urbana-Champaign. It is published in September and February of each year. Staff: Department Head: R. James Kirkpatrick; Asst. to the Head: Peter A. Michalove; Editor: Michael Knezovich; Designer: Jessie Knox; Admin. Secretary: Patricia Lane.

Message from the Department Head

Dear Alumni and Friends,

Change and growth in the Department continued at a healthy pace over the fall 1990 semester. The GeoThrust Committee met at Homecoming; the meeting was productive and the committee's work holds great promise for the Department. Remodeling of our space in the Natural History Building is complete, and we're all beginning to enjoy the benefits. Tim Clarke has joined the faculty, coming to us from Memphis State University, where he was part of the Center for Earthquake Research and Information.

I'd like to take this opportunity to focus on a couple of especially important points.

First, regarding the GeoThrust Committee, let me restate an important point about why its work is so important. This year, only 42% of the University of Illinois budget comes from the state of Illinois. As time goes on, we become more and more like private institutions in our reliance on support from alumni and friends of the Department. I hope you bear this in mind if and when a member of the of the GeoThrust Committee contacts you concerning some of the Department's specific needs.

Second, I'd like to bring you up to date on the important, ongoing issues regarding the University's general education requirements. These requirements cover the course work that each student must do outside his or her major.

General education requirements have been a hot topic on our campus, and in higher education in general, in recent years. The University is seeking the funding for the additional faculty and facilities necessary to reduce the size of general education classes, and to improve the way they are taught. In addition, it is reallocating existing resources for these purposes.

The Geology Department, of course, is a part of this effort, and strongly supports the overall process. At any research university, there is some inherent tension between research/graduate teaching and undergraduate general education, and it's easy to perceive that time spent on one is at the expense of the other. One of the U. of I.'s major responsibilities is undergraduate education, however, and thus it is everyone's job to see that undergraduate education is not shortchanged.

We in the Geology Department have a special responsibility in this regard, as some of the most critical issues facing us as a society and nation have to do with energy, natural resources, and the environment. We have both the responsibility and the opportunity to give non-scientists the basis they'll need to deal with these issues from their perspectives as policy makers, as managers, as citizens.

Consequently, we've revised and added to our general education offerings to better serve the needs of non-science students. One such revision is the application of innovative, computer-based instruction methods (the kind that Professor Philip Sandberg, profiled elsewhere in this issue, is pioneering); new approaches to teaching about natural resources and the environment, the history of life and the global view of earth sciences; and an approach to teaching general geology through the geology of the nation's National Park system.

We've been at this process of revision and improvement for a year and a half now, and the results are gratifying, to say the least. Compared to three years ago, enrollment in our general education courses is up by nearly a factor of three. The students I talk with personally are very enthusiastic about the material covered, and the quality of instruction. I might add that our non-science students bring something of their own to our classes--perspectives we'd be unlikely to get if we were isolated within our own department and discipline.

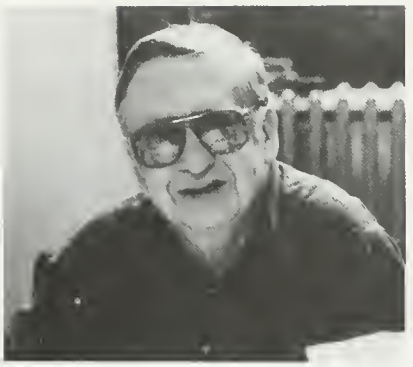
Our experience so far is confirming what the University and what we in the department already believed: that we can offer a high quality general education program in the earth sciences without compromising the vitality of our research, or the quality of education received by our undergraduate majors and graduate students. It is our commitment to continue to do so.

GeoNews

I'm not over the shock. I'm glad to be out, but it hasn't hit me. There are people in great danger back there...and I feel bad about that.

- Paul Seaber -

Seaber Escapes Kuwait after Iraqi Invasion



Paul Seaber, who earned his Ph. D. here in 1962, and headed the water resources section of the Illinois Geological Survey 1987-90, experienced some harrowing times before escaping from Iraqi-occupied Kuwait this past fall.

His wife, Gerda, had been allowed to leave Kuwait on September 12 with 427 other refugees, mostly women and children. She was permitted to take along only a suitcase, and had to leave behind most of her belongings.

Seaber, 57, did not make it back to the U.S. until the end of October. He had gone to work for the Kuwaiti government in April. On August 2, he and Gerda were woken by Iraqi canon fire.

After that, he says that he almost never left home until his eventual escape. "We did not go out. The Americans and Brits and others were being picked up and taken to Iraqi military installations."

Seaber probably got out just in time. "They were starting to do house-to-house searches, knocking on doors," he said. "The Iraqis were looting the country. They were just taking stuff out of apartments and loading it into yellow trucks headed for Iraq."

While in hiding, Seaber did receive food from those of his friends who could still move around safely. The invasion left him with little money, and that was quickly gone. "We bought a lot of food and put it away, and we cut back on our diets," he explained.

With the help of a cookbook that Gerda says she has toted around the world for 31 years, Seaber used part of his time learning how to cook--something he hadn't had to do in earnest during his 31 years of marriage. In addition to learning how to cook, he passed the time reading novels and listening to sketchy news reports on Voice of America, BBC, Canadian, Australian and other foreign radio broadcasts. Three days a week for an hour a day, he could also tune in the Cable News Network on television, broadcast from a station in Bahrain.

"We also watched Iraqi TV," he said. "Saddam Hussein and..., it was all propaganda."

Upon his return, he was happy, tired, and concerned about those left behind. "I came back here, had a cup of coffee, and went to bed. I slept all day.

"I'm not over the shock. I'm glad to be out, but it hasn't hit me. There are people in great danger back there...and I feel bad about that."

Today the Seabers are regrouping and making new plans. Their plan had been to work in Kuwait for a few years and save the money for retirement. Now, most of what the couple owns is still in Kuwait. They are, nonetheless, grateful for their safe return.

(Article adapted from Champaign-Urbana News Gazette, November 3, 1990.)

Photo Courtesy of photographer Joel Dexter, Illinois State Geological Survey

GeoThrust Committee on Campus for Homecoming

The GeoThrust Committee was on hand for Homecoming weekend, October 18-20, this past fall. The committee, chaired by alumnus Alan Scott, met formally at the Illini Union on the Friday before Homecoming. There, members were brought up to date by Department Head Jim Kirkpatrick and Assistant Head Peter Michalove on the status of the department. From there, the committee went on to discuss its agenda and priorities.

Department head Jim Kirkpatrick (left) with GeoThrust Committee Chairman Alan J. Scott (center) and committee member Jack Curtis Threet.

Alumni gathered at Kirkpatrick's home for a Homecoming get-together.

All the committee members were very positive about where the department is going, and about helping the department achieve its goals. The immediate objective of the committee will be to assist the Department in its fund raising efforts; initially, committee members will be calling on alumni about specific needs.

The committee also discussed some procedural points and is so doing, decided to meet twice a year, once each spring and fall, to maintain the momentum that their efforts are building.

Construction is Complete!

As the dust settles, the department can breathe a sigh of relief and satisfaction on completion of the 9-month-long remodeling of offices and facilities.

In all, the $1 million project covered 34 rooms, improving and/or enhancing 40% of the department's total space. Most important are the six teaching labs and eleven research labs or lab complexes. The changes will improve instruction at all levels, increasing computer-based and wet lab research capabilities. Some specific examples: a new clay lab, new labs for sediment analysis, Quaternary geology, and a new geophysics complex.

Funds for the department's new look came from the Urbana Campus, the Division of Operations and Maintenance, the Office of the Vice-Chancellor for Academic Affairs, and the College of Liberal Arts and Sciences.

To all the displaced and inconvenienced faculty and students, thanks for your patience . We think you'll find it well-rewarded.

GeoSciences Needs Your Help!

First, we hope you'll take the time to fill out the reply sheet at the back of the newsletter. We and your classmates want to know what you're doing.

But you don't have to limit your contributions to personal news. Send in news of noteworthy events that we can use in GeoNews.

We also want to hear what you think about the newsletter, good and bad. And, we invite your suggestions about the profiles, feature articles, and regular features that you would like to see in GeoSciences.

Issues:

A Conversation with GeoThrust Chairman Alan Scott

"Governmental support for higher education is going down, not up. It's more important than ever to communicate to alumni, and the community at large, that if you believe in something, you should support it."

To help the department keep up with its changing needs, the GeoThrust Committee needs both the perspective to understand where the department has been and the vision to see where it's headed. It's hard to imagine a person better qualified to chair and guide the committee than Alan Scott.

Scott, a native of Lincoln, earned both his B.S. (1955) and Ph. D. (1959) here at Illinois; his time here also included work at the Illinois Geological Survey. In 1959, he took a position at the University of Texas at Austin; he was there until he took an early retirement to start a consulting firm in 1984. In 1987, he and his firm moved to Boulder, Colorado.

At Texas, he was on hand to experience a period of phenomenal growth, both in the department and of the entire university. In addition to his teaching and research, Scott headed the Texas department's fund raising efforts during his tenure. That experience has him optimistic about what GeoThrust can achieve for our department.

"One of the things I saw in Texas, in general, was absolutely enormous support for their educational system, and that manifested itself in our department, too. In my last years at Austin I held an endowed professorship that was paid for by alumni; as a department, we moved from about five endowed positions to nearly all the faculty positions being endowed."

"Of course, the circumstances of the two campuses and departments are different, but I still see great potential in GeoThrust's work."

"It's important for us all to consider GeoThrust's work as ongoing work with a long range vision and agenda. I saw it work at Texas, and I can tell you that you

must see building what we want to build as a long-term process. You build something like this patiently and steadily."

He sees GeoThrust's work as especially important given current funding circumstances.

"Governmental support for higher education is going down, not up. It's more important than ever to communicate to alumni, and the community at large, that if you believe in something, you should support it."

He's careful to point, out however, that financial support is only part of GeoThrust's broader mission; that is to foster personal and professional camaraderie that lasts a lifetime, the kind of camaraderie you can't put a price tag on.

"Between my years here and at Texas, I've been able to call on a vast network of people. The contacts and camaraderie are very special."

Scott thinks that part of the committee's work is especially important in view of the way he's seen geology education change through the years.

"I taught 25 years at Texas and I currently teach at Colorado School of Mines as an adjunct. Combined with my experience here, I've seen geology move toward more emphasis on quantitative and lab work, which always has been a dimension, and away from field work. The old naturalist type of role

had tremendous advantages, I think-a lot of time with your professor on trips and talks, etc. I think that idea molded a whole generation of geologists. That's what I believed I was getting into ith with geology, and that's how my career has gone."

As a result, continues Scott, "There has always been a sense of family in the departments where I've worked. Sitting here and seeing Wanless's portrait on the wall, I immediately recall the enormous influence he had on students here while he was teaching. And of course, George White and the others.

"That kind of environment fosters personal ties that last a lifetime. I've been at events in Denver attended by more members of my classmates than I can count. We're talking about 30 years and a 1000 miles away from the UIUC campus and these ties are still strong. There was talk of professors and field camps."

It's important for all to consider GeoThrust's work as ongoing work with a long-range vision and agenda.

"With the new emphasis on quantitative and lab work, research can become more individualized; entrepreneurial even. That makes it even more important for the department and the committee to foster and maintain these kinds of ties among students and faculty."

As much as things have changed, Scott thinks it's important to remember how much they've stayed the same in geology.

"An advantage that I think geology has always had is that it is a generalist's field, and I think it will continue to have that advantage. Virtually every field has an interdisciplinary component today, and a geologist, by training, is ready for that. Educationally, you have the chance to get a little bit of everything in addition to geology.

We can't be complacent, we need to tell the public about geology and its importance.

Within the field, we've seen periods where there has been a focusing, but the survivors in the long run are the generalists. For example, I did my Ph. D. in micropaleontology, and I continued with that work for about five years afterward, but I haven't been involved in that field at all since."

"And of course, the new focus on environmental issues will have many implications for us. It makes our role still more important, because the issues are so complex. I mean, a person can think he's saving the environment by walking out of the store using a paper bag instead of a plastic one, without knowing the consequences of the manufacture and disposal of that paper bag."

"We may also begin to see a change in who will be drawn to geology and why, and in where geology fits in any one person's education who might take geology courses as electives. All these things present tremendous opportunities for us."

"We need to begin cultivate people at the high school level and even earlier. The profession as a whole has to consider this. Giving talks at schools and at career days, you find that kids can be a tough audience, but we need to do just that."

In general, Scott emphasizes, "We can't be complacent, we need to tell the public about geology and its importance."

GeoThrust Committee

We'd like to take this opportunity to thank the members of the GeoThrust Committee for their time and effort on behalf of the department.

Alan J. Scott, Chair

Glenn R. Buckley
(Ph. D 73)

Harold J. Gluskoter
(B.S 56)

Morris W. Leighton
(B.S. 47)

Hayden H. Murray
(Ph.D. 51)

Jack Curtis Threet
(A.B. 51)

Caner Zanbak
(Ph. D. 78)

Profile

Philip A. Sandberg

"It is very important," Sandberg believes, "for the general student population to have an appreciation for the evolution of the earth and life on earth as a basis for dealing with present and future global changes."

As a result of what he describes as a peripatetic childhood following his geologist father, A. E. Sandberg, around Latin America, Professor Philip A. Sandberg developed a facility for language that has resulted in a knowledge of eight foreign languages. To date, he has lived for over 12 years in foreign countries.

His research studies have ranged from the ecology, zoogeography, and anatomy of brackish-water ostracodes (microscopic bivalved crustaceans) through carbonate sedimentology to the molecular phylogeny of modern and fossil animals, applying advanced tools such as the scanning electron microscope and radioimmunoassay techniques.

Sandberg was one of the founding members of the local Macintosh Users Group, and he is very involved in developing the Macintosh as an instructional tool. His non-geological interests, which are diverse, include cooking, pottery, acting, linguistics, and with his wife, Susan Brown-Sandberg, managing the farm which they bought in Pennsylvania. Although the terrain at the farm is beautiful wooded hills, the carbonate sedimentologist in him bemoans the fact that it is all shales and sandstones.

Sandberg, a native of Cincinnati, Ohio, received both a B.S. *cum laude* and an M.S. in geology from Louisiana State University. His graduate education there focused on micro-paleontology, invertebrate zoology, and ecology. After leaving L.S.U., his studies took on an international character. Following six months on active duty with the U.S. Army as a Military Intelligence officer, he went to Sweden to do his doctoral work at the University of Stockholm.

"The head of the department from Stockholm had spent a year at L.S.U. while I was still in high school," explains Sandberg. "Just as I was investigating European universities for my doctoral studies, he invited me to come to Stockholm. Fortunately, I had a three-year fellowship that allowed foreign study. The fact that three of my grandparents were Swedish had a very strong influence on my decision; it was a means of reestablishing my roots. As a result of living three years there, both of my children were born in Sweden, so I guess we have come full circle as a family."

Philip Sandberg and his graduate research assistant, Fred Siewers, admiring one of the samples from their hardground collection.

"It was quite different in Sweden," he notes about his years in Stockholm. "There was no specific course work requirement, and the expectation for intense independent study was daunting at first. At least at that time, one was expected to produce a *magnum opus* that rendered any further work on the topic unnecessary for decades."

His dissertation, which, in the Swedish system, had to be published before it could be defended, was a zoogeographic-taxonomic study of a major genus of brackish-water ostracodes with nearly worldwide distribution.

Sandberg recalls, quite clearly, defending his dissertation. "Every doctoral defense is announced in the newspapers, and anyone interested can attend and ask questions. The Swedes claim that their doctoral defense was modeled after the Danish court martial system; in fact, your examiners are called 'opponents'. Both the thesis and the defense are graded, and without a sufficiently high grade,

you cannot get a Swedish university position."

Obviously, he survived the trial, and completed his *filosofie licentiat* and *filosofie doktor* degrees in historical geology. In addition, he set up an exchange program between his department in Stockholm and the Czech Geological Survey and Charles University in Prague, and went to lecture in Prague and make field studies in Moravia and Bohemia.

...an avid investigator driven by the complex way in which different scientific disciplines interlink...

Sometime during this busy period, a visit by the head of the Department of Geology at the University of Illinois, Professor George White, led to Sandberg eventually coming to Illinois as an assistant professor in the spring of 1965. Sandberg continued his work on ostracodes in his early years here, supported by grants from the National Science Foundation, as have been all of his subsequent research programs. Being on the Illinois campus allowed him to advance that work in unforeseen ways. "My work in micropaleontology was greatly aided, and redirected, by the advent of the scanning electron microscope. In 1967, Bill Hay, I, and others acquired one of the first SEM instruments at any university." His expertise in micropaleontology resulted in a one-semester appointment in 1970 as a visiting associate professor at the University of Minnesota.

Eventually his investigations shifted to skeletal ultrastructure and its use in understanding modes of skeletal growth. That work continued during his NATO fellowship at the British Museum in 1972-73. Based there, he was able to make an extended visit to Israel, where he lectured at Hebrew University and conducted marine studies in the Gulf of Elat.

During the late 1960s and early 1970s Sandberg was one of the instructors on field courses that Illinois ran in the Bahamas. Observations he made during those trips led to an interest in carbonate sedimentology and diagenesis. His long term involvement in the study of modern carbonates included teaching appointments at the University of Miami, and the development of his field course "Introduction to Modern Marine Carbonate Environments."

His studies on carbonates also came to have a significant bearing on the question of the original mineralogy of ancient skeletal and non-skeletal carbonates and the clues that those hold regarding long-term oscillations in ancient ocean-atmosphere composition.

Sandberg became interested in the origin of carbonate mud particles and the changes by which those muds are converted into fine-grained limestones. "Few people looked closely at such limestones, because they knew they wouldn't find anything. However we have been able to find evidence of the original carbonate mud mineralogy can be preserved."

Sandberg recalls an episode that has resulted in his undertaking a major new area of study: "At the 1984 Bathurst meeting on carbonate sedimentology in Liverpool, England, I was fascinated by a paper on the application of immunology to paleontology presented by Peter Westbroek. I ended up talking with Peter until nearly 3 a.m."

The application of immunology to paleontology has been part of his work since. During two semesters, one in 1986 and another in 1989, Sandberg worked in Leiden, the Netherlands, with Westbroek and his group. Peter's group is the main center of work in geoimmunology today. In preparation for his first visit, Sandberg took a course in immunochemistry taught by Professor Voss in the Department of Microbiology—another instance in which being on the Illinois campus has enhanced his work. The biological training necessary for this research was facilitated by appointments both as an Associate in the Center for Advanced Study and as a Fellow in the "Study in a Second Discipline" program of the College of Liberal Arts and Sciences. His work with his Dutch colleagues in this area shifted to an immunologic-biochemical study of the potential use

The new cathodoluminescence microscopy facility.

of one resistant bone matrix protein in molecular phylogeny of modern and fossil vertebrates, including an attempt to evaluate affinities of the dinosaurs.

Much of Sandberg's work has been at the interface between the fields of biology and geology, but the crossover into biochemistry and immunology is a fairly new one, not only for him, but for paleontology in general.

Much of Sandberg's work has been at the interface between the fields of biology and geology...

Sandberg at the console of the computerized multimedia classroom.

"Because this is a new area quite different from what paleontologists generally do or have lab equipment for, cooperation on the part of biologists is essential," says Sandberg. "I've found that the colleagues in the biological sciences, such as Ed Voss and also John Clark in Biochemistry, have been very helpful and supportive. Without the benefit of their counsel and their willingness to make their lab facilities available, the work in molecular paleontology could not have advanced."

Another major current area of interest concerns marine hardgrounds— carbonate sediment layers cemented on the sea floor and then exposed to corrosion, abrasion, and infestation by boring and attaching organisms. That research, which is in collaboration with a graduate student, Fred Siewers, concentrates on the Ordovician of the Great Basin. They are investigating changes in the nature of submarine cementation and its controlling factors, as well as the possible role of hardgrounds as a supplement to biostratigraphic correlation of depositional sequences.

In addition to his research and teaching contribution which he has made, and continues to make, to the department, Sandberg served as Acting Department Head for the 1977-78 year.

Over the years, he has remained very committed to the general education geology courses, and, although he has regularly taught introductory geology since arriving at Illinois, Sandberg's recent teaching represents another sort of crossover. For the last three semesters, he has been active in the development of use of the Macintosh in computer-aided instruction (CAI) for introductory geology courses.

"It is very important," Sandberg believes, "for the general student population to have an appreciation for the evolution of the earth and life on earth as a basis for dealing with present and future global changes." He feels that CAI can play an important role in this educational process and, today, he uses the Mac and associated video equipment in one of the multimedia classrooms (developed by the Office of Instructional Resources) for classroom presentation in Geology 102 "The History of the Earth", and in Geology 143 "The History of Life." Under an Apple Seedling Program grant, he is in the process of developing some introductory modules on fundamental geologic principles. Now that rapid compression and decompression of complex images are about to become possible on the Mac, Sandberg sees great potential for the development of interactive, self-help instructional modules, using hypermedia techniques and CD-ROM storage, that could be made available to geology students in a lab setting.

His career and work are too rich and varied to be adequately covered in such a short article. However looking at them, the pattern emerges of an avid investigator driven by the complex way in which different scientific disciplines interlink and able to bring a broad background to bear in revealing important relationships. He is willing to follow his intellectual curiosity wherever it takes him, whether to another country to work with colleagues, or to a lab across campus to learn new techniques to bring to bear on his work. No doubt his work in computer-assisted instruction will spawn ideas for other new projects– that has been the pattern in Sandberg's career. Each area of focus opens other areas for fruitful study. Surely, as a result, the department and the entire field will continue to benefit.

Profile

Timothy Clarke

"In seismology, you can still be part of the whole process-theoretical and practical. In my work, I've been able to not only formulate theories, but to go out and place seismometers to test them."

Tim Clarke, our newest faculty member, brings to his work in seismology a strong theoretical background combined with a keen appreciation of the practical aspects of geology.

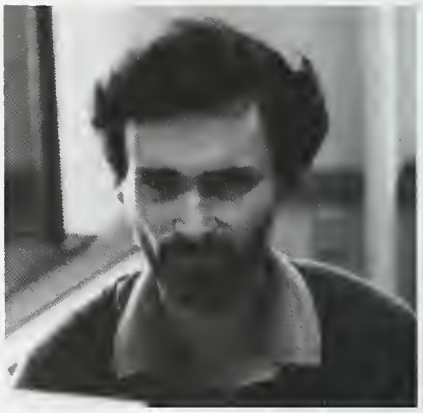
Clarke's studies began with a distinctly theoretical emphasis. He completed his undergraduate degree in mathematics at Cambridge University. He was pursuing a Ph. D. in theoretical physics at Cambridge when, for a variety of reasons, he decided to make a major change in direction.

"I was taking courses in things like astronomy, cosmology, and particle physics. As I thought more about my career, I began to have doubts about maintaining that course. For one thing, I wondered, as a practical matter, what kind of work I could find in the field."

He also wondered about the very nature of the work in physics. "I have always liked the idea of being part of the entire scientific process coming up with a theory, testing it, and adjusting as necessary. In most of physics, it seemed to me that you would be one small person testing one small part of a huge experiment," he explains. "In terms of theory, you would be left to work with one small piece of a much larger picture."

About the time he was having doubts about pursuing a Ph. D. in physics, he talked with a faculty adviser. "During our discussion, he talked to me about the earth actually drawing a diagram showing the core, mantle, etc." It was that early, elementary discussion that led to Clarke's eventual decision to make a change. He stayed at Cambridge but pursued a Ph. D. in seismology. It was a drastic change, considering he had no previous background in the field, but Clarke has been happy with his decision.

"In seismology, you can still be part of the whole process theoretical and practical. In my work, I've been able to not only formulate theories, but to go out and place the seismometers to test them."



Clarke's first stop in the U.S. was at Cornell University, where he worked under a post-doctoral grant from the Office of Naval Research. Working in Cornell's departments of theoretical and applied mechanics, his research was in acoustic seismology.

After two years at Cornell, he was awarded a research fellowship with the Carnegie Institution in Washington, D.C. Under what might be described as an accident of history, he worked in a division of the Institution called the Department of Terrestrial Magnetism. "The department was established by Andrew Carnegie at a time when there was great interest in mapping the earth's magnetic fields. They sent a ship out around the world and drew the map and that was that, but the name remained. The department now has people doing work in astronomy, geophysics, and geochemistry. Of course, there is also another department called the Geophysical Lab that doesn't do geophysics."

His three-year affiliation with Carnegie, which was also supported by an NSF grant, included a semester at Yale, where he taught a course on seismic imaging, and an-

other at Johns Hopkins, where he worked on observation-based research.

Between his time at Carnegie and his move here, Clarke worked at the Center for Earthquake Research and Information at Memphis State University. His work included teaching and research.

"I'm still involved in collaborative research with colleagues from Carnegie and M.S.U., thanks to the wonders of computer networks," he explains. That research is concerned with the boundaries the discontinuities in the transition zone, 300-700 kilometers below the earth's surface.

Seismic data reveal the discontinuities in the transition zone, but it's more problematic to identify the cause of the discontinuities. Clarke has been working on computer-based techniques to distinguish discontinuities caused by boundaries between distinctly different materials from discontinuities caused by different crystal structures of the same material.

"I'm still involved in collaborative research with M.S.U., thanks to the wonders of computer networks."

"Basically, the technique is based on inverse theory; we compute, based on models, synthetic seismograms of what we think we should see and compare them to what we actually observe," he explains.

"One of my main emphases has been to exploit the large amounts of existing data, rather than to formulate a model based on an idealized version of data that we might expect to get in the future."

Clarke expects to continue and perhaps broaden his work in this area now that he's at Illinois, and he's eager to make full use of the advantages that the Urbana-Champaign campus presents.

One immediate advantage he sees is being part of a larger, broader-based department. "I'm going to appreciate having more geologists to talk to. Even though my work is highly theoretical, the people I want to talk to and learn from are geologists."

He's also excited about being on the campus of a comprehensive research university. "I'm looking forward to working with people outside the department, too. There's much to gain from having access to faculty and students working in other disciplines here, particularly with the nature of my work, which crosses disciplinary boundaries. For example, in my work, I must be concerned with the nature of waves. Here, I can talk to people whose main concern is wave propagation."

His wife, Akiwata Mayi-Clarke, also plans to make the most of the University. She has tentative plans to study for her M.B.A., and to study Russian language beginning in the fall. Originally from Brazil, she has an undergraduate degree in math; in addition, she has an M.S. in music, and can speak "who knows how many languages," according to her spouse.

"One of my main emphases has been to exploit the large amounts of existing data..."

Of course, the couple's first order of business is to simply get settled in the Urbana home that they moved into over the Christmas holidays. Between ice storms, several schedule changes on the part of the mover, and a night in a Memphis motel full of Liberty Bowl football fans, the move itself was no small feat. And at the time of this writing, Tim was still wrestling with reconstructing sofas and other household items, not to mention getting his office work station in order.

But with the bulk of the move completed, it's safe to say, as the song goes, that the best is yet to come.

Profile

Scott Wilkerson

I think of myself as a structural geologist first--that's why I am in this field.

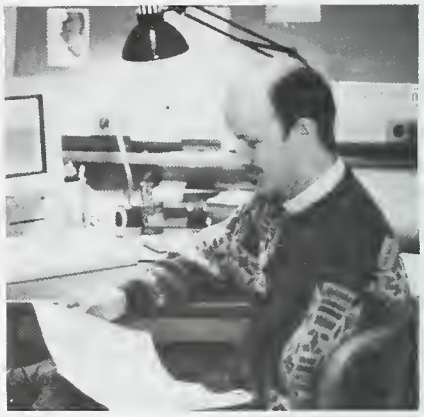
"It seems funny now, but I was afraid of computers when I started as an undergraduate at Murray State University (Murray, Ky.)," says graduate student in structural geology Scott Wilkerson. "I didn't even want to take a computer course."

But at the urging of one of his professors, Wilkerson did take a computer course, and since then his studies and career have thoroughly incorporated the computer as a research tool, much as the entire field of geology has done. Of course, today in geology, computing technology is a commonplace tool, and since his undergraduate years, Wilkerson has worked to exploit that tool's usefulness. Specifically, he has developed and used computer programs to model fault-related folds through the construction of area-balanced cross sections, volume-balanced block diagrams, and computer-generated structure-contour and geologic maps.

At Murray State, he was under a full scholarship that encouraged independent study and research. That situation allowed him to work with MSU professor and mentor Steven Usdansky to develop a cross-section modeling program for IBM PCs.

Usdansky also figured into Wilkerson's eventual choice of Illinois for graduate study. Together, the two arranged to bring Professor Stephen Marshak, a structural geologist here at Illinois, to speak at Murray State. Wilkerson still smiles when he tells that story: "We invited him to our campus, and I think that he probably expected 20 people or so to show up. But we filled an auditorium with four or five hundred people including the dean of the college of sciences. Steve had come directly from some field work in southern Illinois, so I think he was a little nervous at first. I still kid him about it today."

But the lecture was well received, and Marshak, who is now Wilkerson's adviser, also influenced



Wilkerson's eventual decision to come to Illinois. Wilkerson had choices in terms of a graduate institution, but, he says, "In talking with Steve, I found that he asked insightful questions about what I wanted to do. He was one of the few people I'd talked to who was willing to let me do what I wanted to do in terms of research, rather than making me do what he wanted me to do." In addition, Scott had some strongly focused ideas graduate programs. "Having grown up in southern Illinois, I already had the sense of Illinois as a first-class institution," says Wilkerson.

At Illinois, Wilkerson has been able to continue his analysis of fault-related folds, work that has been greatly enhanced by an NSF fellowship. Three components comprise his dissertation deriving geometrical equations and developing computer models describing the three-dimensional relationships of fault-related folds, applying these concepts to seismic interpretations of real structures to test their meaningfulness, and simulating true three-dimensional displacement paths using physical models and X-ray tomography. It's the potential to develop these three-dimensional models that make this work so potentially valuable to geologists in industry and the academic world.

While he values the computer as a crucial tool in his work, Wilkerson makes a point of emphasizing that it is just a tool within a larger

context: "I think of myself as a structural geologist first that's why I am in this field. I'm not a computer jock who happens to be interested in geology. Using the computer adds an interesting dimension to my work--it seems I learn something new every week. But the computer is important only because of its applications, and potential applications, within my field."

"The programs I've helped develop are useful to industry and the academic world alike to teach about and interpret seismic data," explains Wilkerson. "They're graphic, 'what if?,' tools for structural geologists. They can be used in conjunction with seismic data to generate an idea of what's happening in the subsurface."

In talking with Steve (Marshak), I found that he asked the insightful questions about what I wanted to do.

While his first program, Fault!, was written for an IBM platform, he now programs on a Macintosh. He has marketed his programs privately with some success. "It's a pretty specialized product for a rather limited market, so it's not a thriving business or anything, but more of a hobby that provides a platform to get the ideas and technology out. The money is secondary, but it did allow me to buy my own Mac," says Wilkerson.

His work has also opened doors one of them at Exxon Production Research in Houston, Texas, where he was a research intern over the summer of 1990. It's an experience that has enhanced his work here at Illinois, and one he strongly recommends to other students.

"It was my first chance to actually apply structural techniques to real-world problems, and that was exciting. I learned a great deal about interpreting both seismic and well data." "Besides," adds Wilkerson, "it's just a good, broadening experience to be out in the so-called real world."

Physical model apparatus that simulates 3D geometries and kinematics above oblique fault ramps. Internal structures were described using computerized tomography while at Marathon Oil Company's research lab.

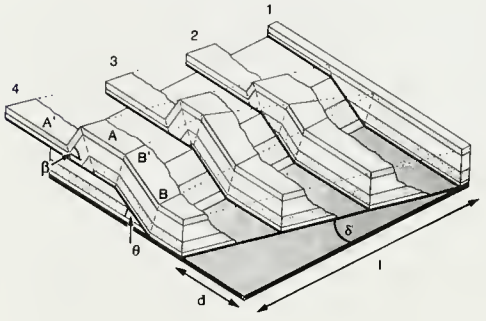
His experience at Exxon continues to pay dividends. People in industry have learned of his work, and he of theirs, and that has led to informal collaborations on particular problems. In addition, Exxon has supplied actual seismic data from the Arkoma Basin, Oklahoma, for Wilkerson to use in testing his three-dimensional models, a crucial component in his work.

Due to finish his work here this upcoming summer, Wilkerson is interviewing in both industry and the academia. Although he's not certain of where he'll land, his internship made a positive impression about working in industry. "It's attractive, I think, because you can do more exciting geology you have access to actual data sets that only an industry setting can provide."

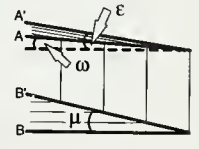
Whatever he finally chooses, we're sure that he'll continue to make the kind of important contributions to structural geology that he has already begun to make with his work here at Illinois.

Figure 1.

(a) Cutaway block diagram depicting the three-dimensional fold geometry of a parallel fault-bend fold. Fold parameters defined are: θ=ramp cutoff angle, β=forelimb angle, δ=displacement gradient (given as an angle), l=length along strike over which δ is maintained, and d=shortening for a given cross section at length l. Axial surfaces for the fold are: A'=foreland syncline, A=foreland anticline, B'=hinterland anticline, and B=hinterland syncline. (b,c) Map patterns of a parallel fault-bend fold with $\theta = 30°$ and $\delta = 15°$. These diagrams correspond to sections 1-3 in part (a). Arrow indicates sense of movement. (b) Structure-contour map of a layer above the upper flat. Map-view axial-surface angles of interest are: μ=angle between B and B', ω=angle between a vertical plane parallel to the ramp strike and axial surface A, and ε=angle between a vertical plane parallel to the ramp strike and axial surface A'. (c) Horizontal geologic map of three layers above fault. Heavy lines indicate axial traces.



(a)



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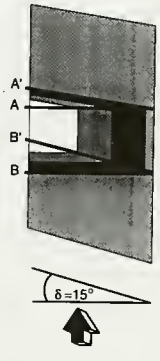

(c)

Alumni News

GeoSciences is for alumni and largely about alumni. Although some tidbits are supplied by faculty and staff, most of the information for each issue is gathered primarily from the reply forms and correspondence that alumni like you send to the department.

Please take the time to complete and return the information form you'll find at the end of each GeoSciences issue. Don't be shy just as you like to read about classmates and other alumni, they'd like to know about you your news is important to them and to us in the department. And please send pictures they will be returned. Also, don't hesitate to send along any press releases or formal announcements of your achievements.

This section has been divided by decade; if you were affiliated with the Department of Geology part of one decade through to the next, you will be listed according to the last degree granted. Within each decade, items are listed in yearly sequence, not alphabetically.

GSA Honors Davis

Congratulations to George H. Davis (B.S. 42), who last October received the Award for Distinguished Service in Hydrogeology from the Hydrogeology Division of the GSA. He describes receiving the award as "The most notable event in my career."

The award, which by the GSA's description is based on a "history of sustained, creditable service to the hydrogeologic profession," certainly befits a most distinguished career. Davis was a research assistant with the Illinois State Geological Survey from 1942-46. After graduate work at UCLA and a stint with Eastman Oil Wells Survey, Davis joined the U.S. Geological Survey in Sacramento, California, in 1948. He was responsible for the management and execution of major investigations of ground water of the San Joaquin and Sacramento valleys.

He served with the U.S.G.S. until 1982, making contributions in a multitude of capacities. Beginning in 1959, first as staff geologist, then as assistant chief and later as chief in the Annual Review Office, he was responsible for preparation of the USGS annual report and for the review and approval of technical papers for publication in the Geological Survey Research Series. His time with the U.S.G.S. was punctuated by a stint with International Atomic Energy Agency in Vienna, Austria.

Since leaving the U.S.G.S., he served as senior hydrologist with S.S. Papadopoulos and Associates in Maryland, and is currently senior consultant, hydrogeology, with Woodward-Clyde Consultants in Gaithersburg, Maryland.

THIRTIES

Donald C. Barrett (B.A. 31) writes that he enjoys the GeoSciences newsletter, and that he has moved. Retired from the Honeywell Switch Division since 1972, he and his wife now reside in Lakeland, Tennessee.

FORTIES

George H. Davis (B.S. 42) received the Award for Distinguished Service in Hydrogeology from the GSA. (See article at front of this section.)

Robert W. Zinser, who took his undergraduate degree here in 1948, and earned an M.S. from Kansas University, writes that he is enjoying his retirement from the Sun Oil

Company (now ORYX Energy) in Kingwood, Texas, playing golf, traveling, and just generally relaxing.

James D. Herold (B.S. 49), whose career with Gulf Oil has taken him to locations including the United Kingdom and Nigeria, continues to do consulting work since retiring from Gulf at chief geologist, U.K. He also continues to travel. This past September, he paid a visit to fellow alum Darrell Helmuth in Oregon he dropped us note about the visit along with Helmuth's address to add to our mailing list.

FIFTIES

F.W. Cropp (M.S. 56, Ph. D. 58), now a professor at the College of Wooster, Ohio, wrote to us en route to last fall's GSA conference. 'Thanks for the Brian Skinner article," writes Cropp in reference to the profile that appeared in the last issue of GeoSciences. "I'll use it in my physical geology class." Cropp also expressed appreciation that the newsletter was printed on recycled/recylable paper, and hoped that "future issues will also be on recycled paper." (Rest assured that will be the case, and you might be interested to know that the entire University is making a point of using recycled stock wherever possible.-Ed.)

Cropp also noted that he has introduced more than 1,350 people to the Grand Canyon on 38 9-day trips. By the end of 1991, he adds, "I will have taken 43 trips with more than 1,500 people. Noting that the trips are booked for 1991, he encourages interested Geology alumni to write him at Environmental Experiences, P.O. Box 8114, Wooster, OH, 44691.

George D. Hockman (B.S. 53) went on to a career in education after taking an M.S. in education from Southern Illinois University in 1961 and an M.S. in biology from Kansas State in 1966. "In 1987," he writes, "I retired from teaching geology and biology at a high school ir Littleton, Colorado. In 1989, I moved into my passive solar retirement home in Estes Park, Colorado. I still work as a summer ranger-naturalist in Rocky Mountain National Park." Sounds like a nice way to retire.

Marvin J. Andresen (B.S. 55, M.S. 56) went south to earn his Ph. D. at the University of Missouri in 1960. Eventually, his career took him north, far north, to the University of Alaska-Fairbanks. He and his wife, Pat, who was in the math department there, are now both retired from the university. He continues to work as a self-employed computer software developer and consultant, while she works, on a part-time basis, as director of the honors program at the university. The couple became grandparents for the first time this past October.

Raymond F. McAllister (M.S. 51) is a professor of Ocean Engineering at Florida Atlantic University in Boca Raton, Florida. McAllister, who earned his Ph. D. at Texas A & M in 1958, now teaches oceanography, and is involved in counseling and recruiting. He scuba dives on a regular basis for pleasure and for work "I've participated in a number of underwater archaeological projects; Atocha, Margarita; the Last Galleon, and Flight 19 (lost in the 'Bermuda Triangle' in 1943-44), to name a few." He adds that he'd like to hear more from his classmates of '51.

SIXTIES

Stephen M. Born (B.S. 61), Professor of Planning and Environmental Studies at the University of Wisconsin-Madison, reports that he's recently completed a stint as chair of the water resources management program at that school. Born, who earned an M.S. at the University of Oregon, another M.S. at Wisconsin-Madison, and a Ph. D. at Madison adds that "over the years I have become addicted to fly fishing for trout."

His son is now majoring in geology/environmental studies at U.W.-Madison.

I. Edgar Odom (M.S. 58, Ph. D. 63), vice president, research and development with American Colloid Company in Arlington Heights, Ill., writes that his recent work has focused on bentonite deposits, and the use of modified smectites for fixation of toxic organic compounds.

His youngest daughter, Alison, is beginning her own career she graduated from the U. of I. in 1989 in industrial engineering.

Daniel A. Textoris (Ph. D. 63), Professor of Geology at the University of North Carolina-Chapel Hill, devotes his teaching and research to areas of Triassic rift basin sedimentation and the determination of cycles, Appalachian carbonates and siliciclastics, and Devonian volcaniclastics of the eastern U.S.

"I presented a Triassic lake cycle paper at the 13th annual International Sedimentological Congress in Nottingham, UK this past August. Linda came along, also, and we both attended a field trip to norther Scotland and the Orkney Islands. Had a ball with Richard Hay, who also attended. Our oldest son, Steven, is an environmental geolo-

gist in Tampa. Our second son, James, is home from one year of teaching English in South Korea. Daughter An graduated from the Dallas Institute of Art in September, 1990, and will soon be working as a professional graphic artist. Also, added one Great Dane puppy to the household of two cats and one Dalmatian."

Paul L. Plusquellec (M.S. 66, Ph. D. 68), is vice president of operations for CNG Producing Co., a subsidiary of Consolidated Natural Gas Co. His work in Louisiana includes oversight of the drilling and completion of wells, the production of gas and oil, construction of offshore platforms and facilities, field operations and reservoir engineering.

SEVENTIES

Terry L. Carius (B.S. 70) has worked for Exxon since earning his M.S. in marine geology at Lehigh University in 1973. He's currently manager of computing and telecommunications for Exxon's western production division in the Los Angeles area.

Julie Kraut Carius (B.S. 71) and I have been married for twenty years this year (1990). We've lived in Houston and Kingsville, Texas, and have been in the Los Angeles area since 1976. I'm hoping the Illini make it to the Rose Bowl this year because that's the time I manage see school friends who come out for the game! (Sorry to disappoint, Terry, but hope you continue to stay in touch with your school friends through the newsletter.-Ed.)

Michael J. Zwert (B.S. 73) went on for an M.S. at the University of Delaware. He's currently working for the Oregon Water Resources Department, investigating groundwater problems in the Columbia River Basalt Group aquifers in north-central Oregon.

"I met my wife, Lisa, who holds a degree in geology/art special studies from the State University of New York (Fredonia, N.Y.) while we were both employed by a geological/hydrological consulting firm in Tuscaloosa, Alabama. We have two boys, Eric, 4, and Kevin, 1. Regards to Hilt Johnson, Ralph Langenheim and A.V Carozzi."

Jim McGovney (B.S. 73) went to the University of California-Riverside for his M.S. and then the University of Wisconsin-Madison for his Ph. D. He's currently living in Houston and working for Exxon, concerned with exploration in southwest Asia.

James W. Mercer (M.S. 71, Ph. D. 73) is president, GeoTrans, Inc., of Sterling, Virginia; his focus is on groundwater applications.

"Returned to the University of Illinois for the first time since my thesis defense in 1973 to participate in a distinguished lecturer symposium sponsored in part by the Department of Civil Engineering."

David K. Beach (B.S. 73) has visited some faraway ports of call since his days at Illinois. In 1976 he took an M.S. in marine geology at the University of Puerto Rico, Mayaguez. Afterward, he received his Ph. D. in marine geology, carbonate sedimentology from the University of Miami, Florida.

He's now working as exploration manager for Marathon Petroleum, Ireland, Ltd.

"We've been living in Ireland since December, 1989. Began working with Marathon beginning in 1979 in exploration in Casper, Wyoming. Made stops in Houston and Midland, Texas, before the transfer to Cork. My wife, Gail, and I have five children, ages 10, 8, 8, 5, and 6 months. Illinois is still home."

William I. Ausich (B.S. 74) was recently promoted to full professor in the Department of Geology and Mineralogy at Ohio State University. Ausich, who attended Indiana University for his A.M. and Ph. D., received the 1990 Schuchert Award from the Paleontological Society.

Thomas L. Chamberlin (M.S. 71, Ph. D. 75) is an assistant professor in the Department of Earth, Space, and General Science at the University of Indianapolis. He's currently teaching earth science and meteorology courses.

"After eleven years in the oil and gas industry, I went back to school. I earned my Ph. D. before I was married, so my wife thought she would never have to support a student/husband. She went back to work, nonetheless, while I went back for my teaching certificate through the University of Northern Colorado. What a trooper!"

Gerry Valenti (B.S. 77) worked for Exxon Mineral in Casper, Wyoming in 1977-78. He earned his M.S. from the University of Wyoming in 1980, and went on to work for Chevron in Denver from 1980-88.

He's currently senior geologist with Chevron doing hydrocarbon exploration of the highlands of Papua, New Guinea. "My family and I lived in New Guinea for 2-1/2 years and recently relocated to Brisbane, Australia. I'm continuing my work using Landsat and radar imagery to plan field geology and seismic program for structural analysis and prospect definition.

"In 1977, I married Linda Mayer, a Casper College nurse whom I met at field camp in Sheri-

dan, Wyoming. We have a daughter (Shannon, 7) and a son (Tim, 5). Presently, we're all learning to speak Australian!
P.S.–Did Hendy ever decide to put his mineralogy labs into a textbook?

Dave Rich (M.S. 77, Ph. D. 79) is president, Geotech Computer Systems. He reports that his geologic computing company keeps him busy, and that the focus is shifting to service and that his client base is shifting to larger petroleum companies and environmental companies.

"(Sons) Mike and Jerry are now studying karate, and Mike is an orange belt (I'm an instructor). My wife Toni was recently profiled on German national T.V. as a typical American working mom. The cat is still worthless."

EIGHTIES

Gary M. Fleeger (M.S. 80) is the computer systems coordinator with the Pennsylvania Department of Environmental Resources, Bureau of Oil and Natural Gas Management. The bureau is the regulatory agency for the oil and gas industry in Pennsylvania. He was married in 1988 and reports that he and his wife bought a home in the wilds of the central Pennsylvania Appalachians.

Martha H. (Hoskins) Schwartz (B.S. 82) is in charge of procuring technical articles, journals, and books for Hazen Research, a process metallurgy and hazardous waste treatment facility in Denver, Colorado. Husband Lee is a project manager for a hazardous waste treatment consulting firm. They have a daughter, Erin Leigh, who is five years old.

M. Scott Mansholt (B.S. 82) earned an M.S. at Southern Illinois University and took a second M.S. in hydrogeology last year from the Colorado School of Mines. He's currently employed by Texaco, where he's environmental regulatory and compliance coordinator.

Jaymee E. (Soldevilla) Delaney (B.S. 83) is a first-year medical student at the Oregon Health Sciences University in Portland.

"I've had one paper published and two abstracts; another paper is pending in ophthalmology. I have very fond memories of my two short years in Urbana, Illinois, and of wandering the Bighorn mountains during field camp. My husband, Frank, who graduated from Illinois in 84, is finishing his residency in neurosurgery this coming July. We are proud parents of Kristin Ellen Delaney, who will be three years old this July."

Susan E. Collins (B.S. 83) is working for Shell Oil in Houston, reprocessing old Shell and purchased seismic data to improve sections for interpretation. She was married last August to Randolph M. Collins, who is a project manager for Western Atlas International; he works in R & D on their rotary coring tool.

"I loved the last issue, but I was sad to hear that field camp has moved from Sheridan, Wyoming, to Utah. I've lots of fond memories from camp."

Keith Archbold (B.S. 84) is a lieutenant in the U.S. Navy. He currently is stationed in San Diego as an instructor pilot. He's also pursuing an M.B.A., with an international focus, at the University of San Diego Graduate School of Business.

"Time to dust off those old French books; language proficiency goes out the window in a heartbeat."

Valla (Jones) Earl (B.S. 84) has received civil engineering degree from Montana State University. Her husband, David, a physician, has recently set up a new practice in Cody, Wyoming.

"We're living in the boonies about 12 miles from Cody, below Carter Mountain." She and her husband have a son, Jonathan David Earl, who will be a year old this May.

Bryan G. Huff (B.S. 81, M.S. 84) did well site work after getting his M.S. He joined the Illinois State Geological Survey in 1986, and was promoted to associate staff geologist. He tracks oil and gas development in the state and provides technical support to individuals, companies, and state and federal agencies. He's also authored or co-authored about a dozen publications on the oil and gas industry in Illinois.

"More people should write, but I'm not one to talk this is my first response!"

Amy N. Stecyk (B.S. 81, M.S. 85) is a project manager with Versar, Inc., of Greeley, Colorado, investigating hazardous chemical contaminations. Stecyk, who was a Fighting Illini volleyball player during 1977-78, was recently profiled in a Champaign-Urbana News Gazette article. In it, she talked about her work: "I'm a generalist. I work in geology, in communications using presentation skills, and in business in dollars and sense. It's very interesting and it's very important.

"It's the best job I've ever had. It's significant in how it may impact the water that residents drink, use, swim or fish from.

She also speaks of enjoying the good things in life, including searching for fossils and crystals along Colorado mountainsides, skiing,

playing soccer, tennis, and yes, volleyball.

Jerry Bowden (B.S. 86) is working on his M.S. in Geology while employed at Patrick Engineering, Inc., in Glen Ellyn, Illinois. He works in the geology division, helping to conduct environmental and geotechnical investigations. Bowden is engaged to be married this spring.

Dae-Kyo Cheong (M.S. 87) did his doctoral work at the University of South Carolina. His dissertation incorporated a knowledge-based expert computer system to characterize hydrocarbon fields. He's returned to South Korea to work at the Korea Ocean Research and Development Institute (KORDI) as a senior research scientist. He's currently researching coastal, shallow and deep marine depositional settings around the Korean peninsula.

John C. Yarnold (B.S. 87) is a Ph. D. candidate at the University of Arizona-Tucson. He has worked with BP America in Anchorage, Alaska; with Chevron U.S.A. in Denver, and with the U.S. Geological Survey in Menlo Park, California.

"I'm in the middle of field work, but thought I'd bring you up to date. I just returned from a workshop in the Soviet Union where I gave a talk. That may result in some joint monitoring between me and some American colleagues and Soviet scientist of a synthetic catastrophic rock avalanche that will be triggered in the U.S.S.R. in 1997. Best regards to all"

Don Keefer (B.S. 85) and Laura Harbison-Keefer (B.S. 90) both work at the Illinois State Geological Survey. Don works in the groundwater protection section, and is working on his M.S. Laura works in the office of sediment and wetland studies. They live in Urbana.

Faculty

Stephen P. Altaner, associate professor
David E. Anderson, professor
Thomas F. Anderson, professor
Jay D. Bass, associate professor
Craig M. Bethke, associate professor
Daniel B. Blake, professor
Chu-Yung Chen, assistant professor
Wang-Ping Chen, associate professor
Timothy L. Clarke, assistant professor
Richard L. Hay, Ralph E. Grim Professor
Albert T. Hsui, associate professor
W. Hilton Johnson, professor
R. James Kirkpatrick, professor/dept. head
George deVries Klein, professor
Joan Kluessendorf, research associate
Ralph L. Langenheim, Jr., professor
C. John Mann, professor
Stephen Marshak, associate professor
Joel W. Massman, associate professor
Peter A. Michalove, assistant to dept. head
Alberto S. Nieto, professor
Charles Norris, research associate
Lois M Pausch, acting librarian
Philip A. Sandberg, professor

Adjunct/Emeritus Faculty

Albert V. Carozzi, emeritus
Keros Cartwright, adjunct/ISGS
Carleton A. Chapman, emeritus
J. James Eidel, adjunct/ISGS
Leon R. Follmer, adjunct/ISGS
Donald L. Graf, emeritus
Arthur F. Hagner, emeritus
Donald M. Henderson, emeritus
Morris W. Leighton, adjunct/ISGS
T.L. Phillips, professor (with plant biology)
Robert Reynolds, adjunct/professor
Harold W. Scott, emeritus

Non-Academic Staff

Jean E. Daly, staff clerk
David Ehrensperger, library clerk II
Murle Edwards, clerk
Barbara Elmore, transcribing secretary
Jessie Knox, cartographer
Eddie Lane, electronics engineering assistant
Patricia Lane, administrative secretary
Gordon L. Madise, system administrator
Marsha Powell, account technician I
Diana L. Walter, library technical assistant II

Please take a few moments to let us and your classmates know what you've been doing: promotions, publications, election to office, marriages, parenthood, moving, awards. We'd all like to hear from you!

Name _____ Response date _____

Home Address _____ Office Address _____

_____ _____

_____ _____

_____ _____

Home Phone _____ Office Phone _____

Degrees from Illinois (with year) _____ Degrees from other universities _____

_____ _____

_____ _____

Present employer and brief job description _____

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Other news you would like to share _____

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Your comments on the alumni newsletter _____

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Place
Stamp
Here

Editor, *GeoSciences*
Department of Geology
University of Illinois
245 Natural History Building
1301 W. Green Street
Urbana, IL 61801-2999

Department of Geology
245 Natural History Building
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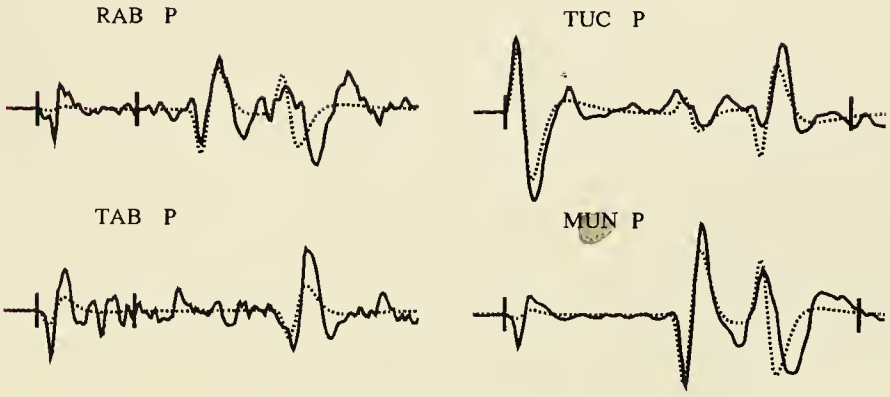
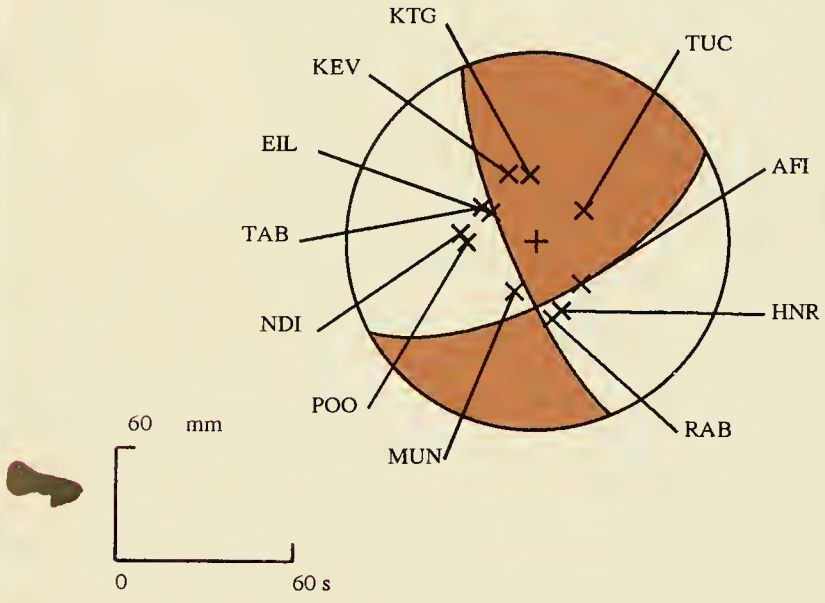
University of Illinois at Urbana-Champaign

Department of Geology
Alumni Newsletter
Fall '91

GeoSciences





UNIVERSITY OF ILLINOIS

GeoSciences

Alumni Newsletter FALL 1991

Cover Illustration: Result of waveform inversion for the earthquake of Jan. 1, 1969 which is located in the southern portion of the Kuril-Kamchatka arc. In this region, earthquakes show of down-dip extension which persists to an unusually large depth of 450 km. Examples of *P*-wavetrains and the *P*-wave radiation pattern are shown.

GeoSciences is the Alumni newsletter for the Department of Geology, University of Illinois at Urbana-Champaign. It is published in September and February of each year.

Staff: Department Head: R. James Kirkpatrick;; Asst. to the Head: Peter A. Michalove; Editor: Vanessa Faurie; Designer: Jessie Knox; Admin. Secretary: Patricia Lane.

Message from the Department Head

As I sat down last night to think about what to write in this letter, it occurred to me that this past year was certainly an interesting one—more interesting than we would have liked. Further reflection, however, made me realize that it hasn't been all that bad. Enrollments have increased, significant new research programs are underway, our new undergraduate and graduate programs are in place and remodeling of the Natural History Building continues.

The big news was the fire last February. Despite the significant damage, it could have been much worse. Most importantly, the irreplaceable collections of the Geology Library and the Museum of Natural History were not damaged. The fire itself was confined to the fourth and fifth floors, and most of the damage was caused by water. Apparently, the firefighters pumped more than two million gallons of water through the building. About 15 percent of our space was significantly damaged.

The seismology group (Wang-Ping Chen, Tim Clarke and their students) were most affected. They had just moved into remodeled offices and labs and were directly under the fire. They lost several computers and many books, maps and other paper forms of data. Fortunately, none of the students lost any irretrievable data, although it was touch-and-go with some of the computer tapes. We found the group some temporary space in the Beckman Institute; they may not want to come back.

In addition, four faculty offices and the Departmental cartography facility were damaged enough to force people to move out temporarily. Tom Anderson's mass spectrometer lab was also knocked out of commission. The University has been very good about repairing the building and replacing the damaged equipment and personal belongings. Most of the damaged rooms are now repaired, and we expect to be fully operational by early fall.

As the fire damage was being repaired, we received word that we will have funds to continue the remodeling of the Natural History Building. Our emphasis this year is on developing computational facilities. The four major labs to be renovated are a computational geophysics lab for Albert Hsui's research program: two computer instruction labs, one for the introductory courses and the other for upper-level and graduate courses; and the general Departmental computer lab.

Computer-aided instruction is developing rapidly at the U. of I., and this Department is taking a strong leadership role in that effort. As described in an article in this issue, Philip Sandberg and Albert Hsui have received grants for new instructional computers. The ten computers Philip will buy will be the core of the instructional lab for the general education courses.

Enrollment in our general education courses continues to increase rapidly. We expect to have our laboratory instructional facilities for these classes nearly saturated this fall. Not only does this increased enrollment enhance our reputation at the University at a time of decreased numbers of majors in earth science nationwide, but it increases the number of citizens with some education concerning resource and environmental issues, how the earth works and the knowledge that the earth is an object for rational scientific study. Based on preliminary enrollments for the junior and senior level courses, the number of majors appears to be increasing slightly. None-the-less, the numbers are far below what many of us remember. I do not see large increases until the employment picture improves.

Although the financial status of the University and the state of higher education in general has also seen better days, the U. of I. did relatively well this year compared to universities in other states. We have a flat budget, meaning a decrease in funds for instruction because of the increased costs of such items as library materials and utilities. Many other states, such as New York, have it much worse. In many ways, the situation in higher education is similar to the late 1940s and early 1950s with many older people returning to college. Unfortunately, there is no program similar to the GI Bill to help them. Many people, often with young children, are trying to finance college on their own. The future of this country depends on our having a highly educated population. I hope that you will urge your state legislature and administration, whatever state you live in, to increase the fraction of the state budget going to educatiuon and especially to financial aid. The United States cannot afford not to do it.

GeoNews

It took firefighters from Urbana, Champaign and the University three hours to get the blaze under control because it was located in the rafters of the old, dry structure and, therefore, difficult to get at.

Fire causes more than $2 million in damage

Most of the cleanup and repair work in the Natural History Building has been completed since a February 26 fire caused more than two million dollars in damage, including the loss of computer equipment and other Department of Geology property as a result of smoke and water damage.

A welder's torch is believed to have been the cause of the fire, which was generally isolated on the fourth floor of the building's northeast side where construction work was going on in the School of Life Sciences.

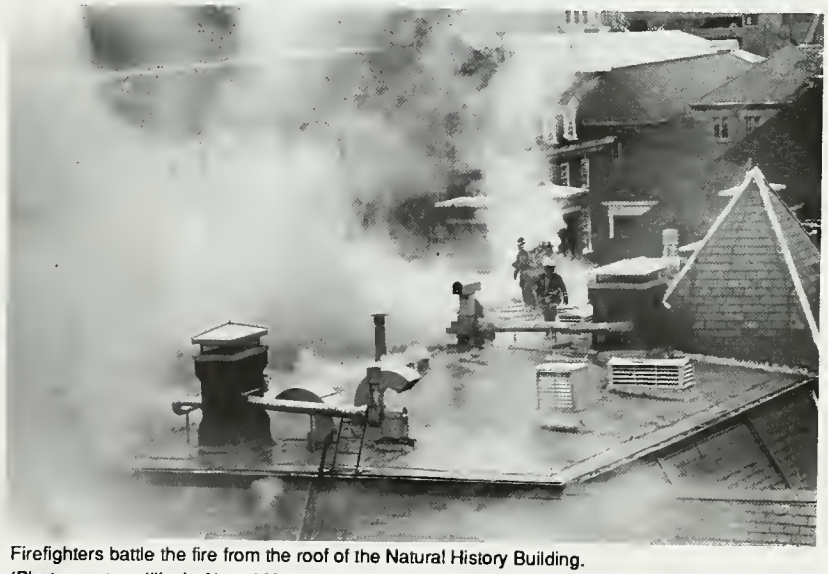
When the alarm sounded during afternoon classes, the building was quickly evacuated. Some people took what materials they could gather from the building, including some caged hamsters belonging to biologists in the School of Life Sciences. It took firefighters from Urbana, Champaign and the University three hours to get the blaze under control because it was located in the rafters of the old, dry structure and, therefore, difficult to get at. Part of a ceiling collapsed and slightly injured two firemen; another fireman was treated for exhaustion.

Geophysicists Wang-Ping Chen and Tim Clarke lost sensitive computer equipment and seismological data from smoke and water damage and collapsed ceilings. Seven offices and two labs were no longer useable, and some faculty members and graduate students were temporarily relocated. Tom Anderson's lab had a hole in the ceiling, and before repairs could be made, a heavy rain caused some flooding. His lab, however, was still operable.

Damage to department property and costs for relocating staff totaled about $110,000.

The Museum of Natural History received only minimal damages. And the well-known bison encased in glass had to be blow-dried and combed.

The building, which dates back to 1892 and is on the National Register of Historic Places, was closed for a little more than a day, except the north end remained closed off for several days after that. Officials said the building would be fully repaired and operational and staff members back in their offices by the time students returned to campus in this fall.



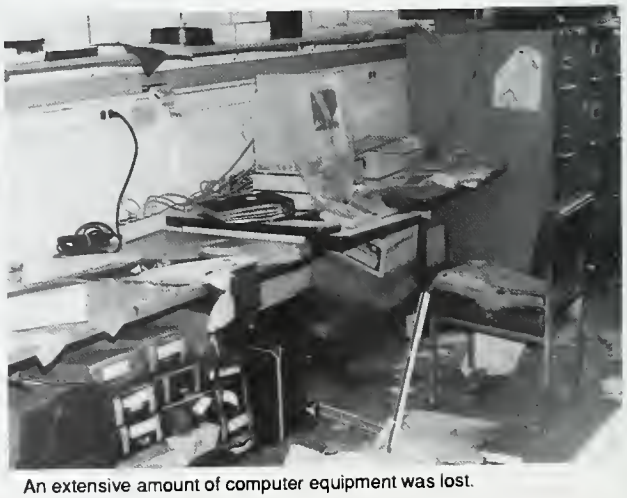
Firefighters battle the fire from the roof of the Natural History Building.
(Photo courtesy Illinois Alumni News)

A Fireman uses an axe to gain access to the fire's source. (Photo courtesy Illinois Alumni News)

Wang-Ping Chen's office received some of the worst damage.

Part of the roof collapsed in Tim Clarke's new office.

Debris was scattered throughout Clarke's office.



An extensive amount of computer equipment was lost.

Altaner named University Scholar

When Professor **Steve Altaner (Ph.D. 85)** found out he was named a 1991 University Scholar, it came as a complete surprise.

"I didn't expect to receive the award at all," he said. "But it was very much appreciated. I wasn't sure they had the right name."

The U. of I. University Scholars award honors faculty members who've made notable contributions to research and teaching.

My strong feeling is that the two are intertwined in my job," Altaner said. "I can think of several projects that have come about from the classroom.

"Graduate students are a tremendous resource," he added. "My goal is to get students to think, speak and write at a much higher level. They're initially hesitant to say much to criticize a paper, but they soon start thinking and questioning."

Altaner teaches graduate courses in his areas of research interest—mineralogy, petrology and geochemistry of clay minerals. He examines the crystal structure of clay minerals and strives to determine the origin, occurrence and significance of clay minerals in their natural environment.

"Clay minerals tell different stories in different settings," Altaner said. "They can determine something about deeper problems. The chemical conditions, temperature, time and pressure that the minerals formed under can reveal the geological history of an area. From small pieces of coal, we can draw conclusions about the plate tectonics of an area."

Altaner's studies currently range from coal in east Pennsylvania to modern lake deposits in central Oregon to rocks from a modern geothermal west of Naples, Italy.

The monetary portion of the University Scholars award will

Steve Altaner

enable Altaner to extend his research into areas he's not able to support with grants, such as foreign travel and some additional equipment.

In the fall, he will be on sabbatical to continue his research and to explore some new projects. Altaner will join Richard Hay in southwest Colorado to look at volcanic sediment in tuffs (layers of rock made up of fine-grain volcanic debris). Two drill holes are planned for that location as part of the Continental Scientific Drilling Program. The sedimentary basin is next to a large silver deposit, and Altaner will examine the core's mineralogy and geochemistry.

Hsui develops hands-on exercises with NeXT computer award

During the past two decades, geology has moved from a descriptive science to a more quantitative discipline. Many of the modern concepts in physics find applications in geology.

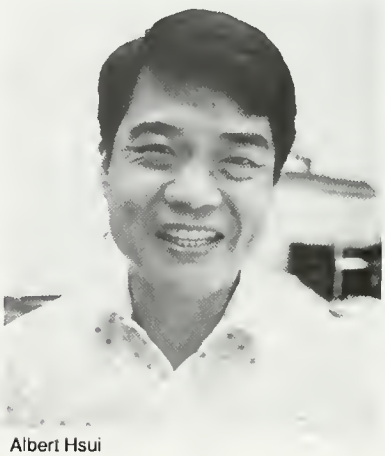
For example, fractal analysis is used to study surface topographic structure of different tectonic provinces so that space-based measurements can be used to delineate tectonic processes taking place in remote areas. Chaos is used to mode non-linear fracture dynamics such that earthquake occurrence can be studied.

One of the present objectives of the Department of Geology is to provide students with more quantitative training so they will be better prepared to tackle modern geological problems.

To help achieve this goal, Albert Hsui, professor of geophysics, has received a "NeXT at Illinois" grant for the purchase of $24,000-worth of NeXT computer equipment to develop hands-on, practical exercises.

Unlike the Macintosh computers, NeXT computers can handle the large amount of data and computations (such as geographic, topographic, gravity and other geophysical data) needed to make the exercises meaningful. With the aid of a work station such as NeXTcube, students can gain greater appreciation of the interaction between quantitative analysis and realistic geological behavior.

Hsui will develop three exercises to demonstrate how surface geophysical measurements change as subsurface geology varies: seismograms and earthquake studies; gravity and forward/inverse problems; and stresses and coordinate transformation.



Albert Hsui

Computer lab to open for beginning geology students

A Departmental computer-instruction facility made possible by a recent Apple Core Award will provide a significant new learning opportunity for students in the introductory geology courses.

Professor Philip Sandberg received the award, which is jointly sponsored by the Educational Technologies Board and Apple Computer, to purchase ten instructional Mac IIsi computers to supply the lab.

In addition to enhancing student understanding of processes and spatial relationships in geology, the lab will provide a means for students to review lecture material, including graphic images shown in class. Geology 100 (Planet Earth) and 143 (History of Life) will make use of the lab beginning in the fall semester. Most of the other general education courses will begin to use it within the next two semesters.

Through the efforts of Sandberg and colleague Stephen Marshak, Geology 100 and 143 are already heavily involved in computer-aided instruction, have recently made dramatic increases in enrollment and have materials ready to use in the new laboratory.

Since geology deals with three-dimensional distribution of features ranging from the large-scale layering within the earth to the atomic scale structure of minerals, such relationships can be modeled by means of computer graphics. For example, the HyperCard core module on plate tectonics presently being developed by Sandberg will form the basis for an expansion which will include modules on some of the diverse ways in which plate tectonic mechanisms control the nature of earth processes.

"Over the past few years, we have made use of a number of geological programs in demonstration," Sandberg said. "We have acquired and developed profiency with a number of graphics, animation and 3-D modeling programs and produced some animations using them."

With the appropriate software, students can even leave responses to exercises via computers in the laboratory and can receive feedback from their teaching assistant. In earlier years, such material was presented as overheads or slides, and was difficult or impractical to have them accessible for student review.

"Instead of spoon-feeding the answer, we can ask questions and combine graphics and texts that expand," Sandberg said.

"We need to be ready to take advantage of all the pedagogical advances, and the laboratory will make that possible."

DEGREES GRANTED

Bachelor of Science

August 1990
Jeff J. Bernstsen
Richard Daniel Kendrick Jr.
Brian Keith Soltermann

January 1991
Joseph Patrick Fagan Jr.
Theresa Ann Henry
Scott Duane Lockert

May 1991
Chad Michael Dobrei
Richard Dennis Poskin
Stephanie Marie Shakofsky

Master of Science

August 1990
James Alan Cremeens (Uplift and Strike-Slip Faulting in Response to Basin Subsidence: The Rough Creek Fault System of Western Kentucky and Southeastern Illinois)

January 1991
Honn Kao (Earthquakes Along the Ryukyu-Kyushu Arc Strain Segmentation, Lateral Compression and the Thermo-Mechanical State of the Plate Interface)

May 1991
Douglas Joseph Kelly (Collection and Interpretation of Pneumatic Slug Test Data in a Highly Permeable Aquifer)

Doctoral

October 1990
Brian L. Phillips (Investigation of Structural Phase Transitions in Minerals and Analogue Systems by High-Temperature Magic-Angle-Spinning Nuclear Magnetic Resonance Spectroscopy)

January 1991
Robert Hal Lander (White River Group Diagenesis)

May 1991
Thomas F. Corbet Jr. (Effects of Erosion on Pore Pressure and Groundwater Flow in the Western Canada Sedimentary Basin)

Hans William Papenguth (Experimental Diagenesis of Lime Mud)

HONORS AND AWARDS

Outstanding Teaching Assistant Award
Eric Holdener,
Kim Weborg-Benson

Morris W. and Ada B. Leighton Award
David Grimley, Honn Kao

Harold Scott Scholarship
John Werner

Chevron Undergraduate Scholarship
Scott Lockert,
Anahita Tikku

Issues:

Arnold S. Marfunin

"I appreciate the scientific and human atmosphere here in the department," he said of Urbana-Champaign. "I like the atmosphere of university towns. New York and Chicago are for more general impressions. But in Urbana, I've met nice people and specialists to work with."

Soviet mineralogist visits UIUC

Renowned Soviet mineralogist Arnold S. Marfunin spent most of his two-month visit to the United States last May and June in the U. of I. Department of Geology at his own request.

The chairman of the mineralogy department at Moscow University was in Urbana to exchange knowledge and ideas with UI scholars and to collaborate on an investigation of the structure of potassium feldspars before going on to brief visits at the University of Chicago, the California Institute of Technology and UCLA. Marfunin also took advantage of the time away from his usual duties in Moscow to work on his ambitious editing project: a four-volume work entitled, *Higher Mineralogy*.

Marfunin is credited with charting a new course in mineralogy by involving the concepts and techniques of solidstate physics. ...

"I appreciate the scientific and human atmosphere here in the department," he said of Urbana-Champaign. "I like the atmosphere of university towns. New York and Chicago are for more general impressions. But in Urbana, I've met nice people and specialists to work with."

Although he studied mining engineering initially, Marfunin is credited with charting a new course in mineralogy by involving the concepts and techniques of solid-state physics. He is the author of the landmark textbook familiar to many geology alumni, *Physics of Minerals*, as well as *Spectroscopy, Luminescences and Radiation Centers in Minerals*. A corresponding member of the prestigious Academy of Sciences of the USSR, Marfunin has also worked extensively in the field of applied mineralogy, particularly in regard to the untapped potential uses for diamonds.

Marfunin has also worked extensively in the field of applied mineralogy, particularly in regard to the untapped potential uses for diamonds. ...

The honored Soviet guest was enthusiastic about the value and quality of his UI visit, which was sponsored by the Midwest Universities Consortium for International Activities.

"I need just this intense work in the department here to have an enjoyable stay," he said.

You're invited

Take note. The Department of Geology is hosting an alumni reception at the annual meeting of the Geological Society of America at 7 p.m., October 21, in the Torrance Room of the San Diego Marriott. Jim Kirkpatrick and several other faculty members will be on hand to visit with alumni.

Profile

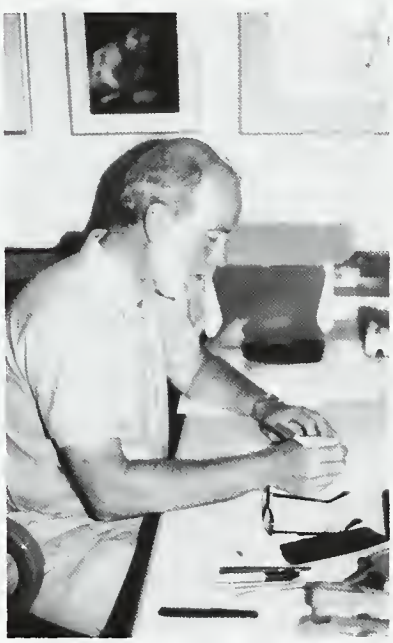
Thomas F. Anderson

"Teaching is an opportunity to bring others to understand the work you do," he says. "It's formalized in courses to take stock, explore things. But undergraduates have to be exposed to a variety of things."

Anderson returns to teaching full time

After taking time out to experience the administrative side of academe, Professor Tom Anderson was back in the classroom this past year on a full-time basis.

In 1987, Anderson split his professional time to participate in the College of Liberal Arts & Sciences administration as associate dean and secretary of the faculty. He made the move because he believed the point of view of someone from the sciences was lacking in college affairs. Having been at the University for almost twenty years, Anderson knew how the campus operated. The job also provided a new personal challenge.



Although he enjoyed the experience, learned a lot and interacted with people from other disciplines, Anderson missed the involvement with students on a full-time basis and felt it was time to come back.

Given his geochemistry background, he teaches Stable Isotope Geochemistry and participates with others in Geochemistry of Sediments and Natural Waters and Physical Geochemistry, along with a rotation of teaching Geology 101. Anderson is also the resident expert in oceanography at the 300- to 100-foot level. "It has its own allure," Anderson says of the field. "Kind of like astronomy."

Anderson's research focuses on how the isotopes of light elements are distributed in the Earth, how waters evolve and the temperature that minerals precipitate from water, as well as the degradation of organic matter.

The interest in such matters evolved from a young boy who wondered how the world operated and looked at rocks and tried to figure out how they got there. But interest in the actual profession didn't develop until Anderson was in college and saw courses offered in geology.

"It's like combining an avocation with a vocation."

"I was intrigued by it right away," he says. "It's like combining an avocation with a vocation."

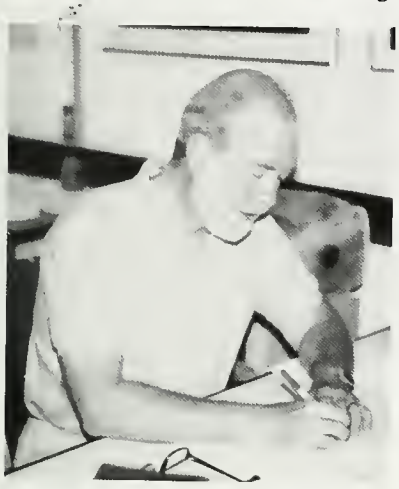
The time he spent at the Lamont-Doherty Geological Observatory from 1961-67 was particularly interesting to Anderson because "many guiding principles were being turned around." As continuous geological data was being analyzed, new interpretations about plate tectonics and continental drift were hotly debated.

"I was not more than an observer," Anderson says, "but I had a front-row seat."

In 1966, a former instructor from Columbia was named head of the department at the U. of I. And after a year of post-doctoral work at the University of Chicago, Anderson then joined the department in 1968. He says the campus did not have many

attractions then, and he didn't anticipate staying at the U. of I. for long.

But nor did it interest him to go into the oil business. Anderson likes the intellectual challenge of working with students. He can't imagine himself ever not teaching.



"Teaching is an opportunity to bring others to understand the work you do," he says. "It's formalized in courses to take stock, explore things. But undergraduates have to be exposed to a variety of things."

Perhaps one of the more rewarding aspects of his teaching is when students who may not have done so well in his class come back and tell him that they really appreciated a course.

"You hope to have experiences like those," he says, then laughs. "It makes a lot of frustrations worthwhile."

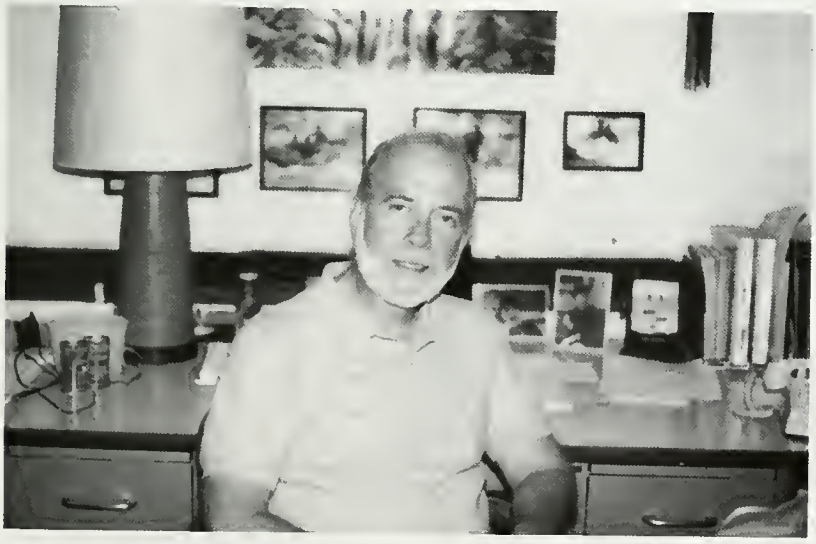
He describes his teaching style in two ways. First, he makes sure he has organized the important material to cover and question in the class. But then he also strives to exude enthusiasm for the subject, "not just to entertain," he says, "but to get *them* enthused."

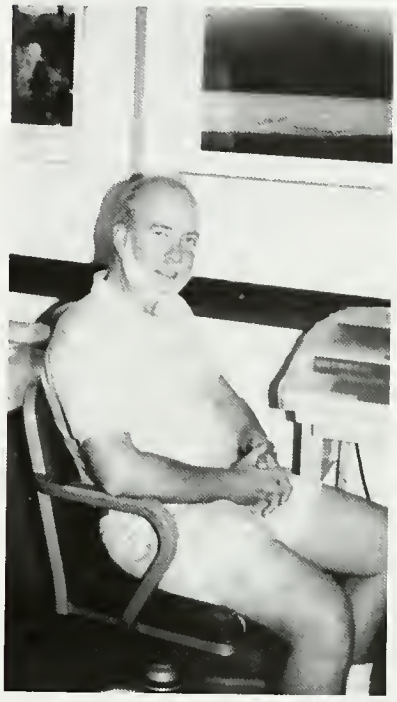
But in courses such as 101, that's not always easy.

"I was not more than an observer, "Anderson says, "but I had a front-row seat."

"In teaching 101, direct communication is lacking," Anderson says. "You can't use tactics of give-and-take between students and instructors. It's also hard to get (the students) to ask questions."

That ability to communicate is one of the reasons why he enjoys the research work he conducts with colleagues and graduate students. And now that he's back in the department full time, Anderson plans to focus his research efforts on a joint, international effort to study an organic-rich shale from England, and several projects in the Illinois Basin, analyzing water-rock interactions, basin fluids, and rock and sediment.





Along with his research and teaching, Anderson finds some time to travel with his wife and work in his garden. He also likes to cook various foods that are indigenous to the countries and cultures he has visited over the years.

Perhaps one of the more rewarding aspects of his teaching is when students who may not have done so well in his class come back and tell him that they really appreciated a course.

And during that time, as it is today, the man who once thought his stay at the U. of I. would be short still calls Urbana home.

Profile

Mary Ann Glennon

"Generally, my family knows that I work with earthquakes," Glennon says. "That's as far as it goes. It's kind of funny."

Glennon puts in her time on underground research

"I was interested in trying to put some constraints on the plate tectonics, and I think seismology is a good way to do that, a quantitative way," says Mary Ann Glennon. "When I came back to school—I was working several years—I found that in order to do the work that I really wanted to do and get the responsibilities, the Ph.D. was important."

And that's how Glennon found herself at the U. of I. three years ago to begin work on a Ph.D. in geology with a specialization in earthquake seismology. She has a bachelor's in geophysics from Boston College and a master's from Michigan Technical University.

Her work at the U. of I. is with Professor Wang-Ping Chen. After a February fire in the Natural History Building caused some offices to be damaged, Glennon was displaced and took up temporary residency at the Beckman Institute.

In her office there one summer day, Glennon seemed settled in and at ease wearing shorts and a Banana Republic T-shirt. But the nature of her research is anything but easy-going. It takes some time and thought to explain just what it is she does so that anyone who's not a seismologist can understand. Even her family is still kind of in the dark.

"Generally, my family knows that I work with earthquakes," Glennon says. "That's as far as it goes. It's kind of funny."

"When I started, the concepts of physics and math were not obvious to me. It took a lot of work to understand. It's intriguing."

Glennon studies deep-focus earthquakes in the Kuril/Kamchatka north of Japan. She gathers data from seismograms recorded from stations throughout the world that show patterns of earth movement. Earhtquakes are characterized by the seismic radiation they emit in all directions. The earthquakes Glennon studies are deeper than

two hundred kilometers, and they show unusual patterns in the strain of the slab.

At this point in her study, she is finishing her first paper and gathering data for the last leg of the project. Although the earthquake activity she's interested in is north of Japan, she studies them in Urbana. The data printouts are gathered from the Lamont-Doherty Geological Institute in Palisades, New York.

"It's less than glamorous work," she says, "sitting in front of a microfiche reader-printer for hours."

She estimates that she spent one month of solid research there, but not at one stretch. "You can't do it," she says and laughs. The rest of her work is conducted on computer.

"The technique of putting the data into the computer is not very difficult. You digitize the seismograms and then you do some calculations to get it in a form the computer can read. That part is very routine. But in order to correctly describe the wave forms around the globe, that's more difficult."

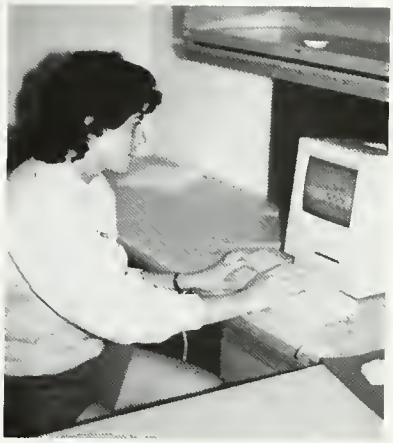
Seismology is not an easy field to chose. Learning it, understanding it is an evolutionary process. It doesn't just all click in your head one day.

"It presented a real challenge," Glennon says. "When I started, the concepts of physics and math were not obvious to me. It took a lot of work to understand. It's intriguing."

One aspect of her field that is immediately obvious is that there are few women. But fortunately for Glennon, that aspect has never been an issue, much less a disadvantage.

"It's been that way since I started my undergraduate more than ten years ago now," she says. "There are a lot of women in this department, graduate students. And in a way it's different than my undergraduate and master's where there were maybe two. But as a student, I don't think there's ever been any problem."

As much as Glennon works, she might not even notice if there were a problem. Living and breathing one's work while earning a Ph.D. is what most graduate students do, in her mind. The work paid off though when Glennon was named the 1990 Outstanding Woman Graduate Student.

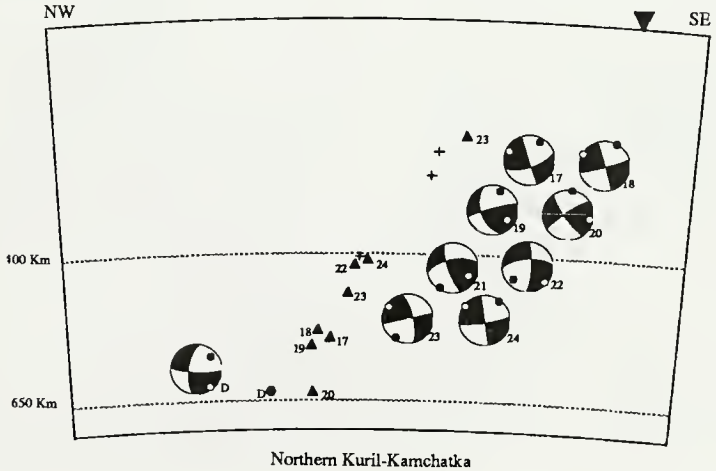


Perhaps when the Ph.D. is in hand, about two years from now, she'll have more time for other interests. She'd eventually like to do research at a national laboratory or for the U.S. Geological Survey. The obvious place for her to go as a seismologist is California, but to be closer to family, she'd like to be in the Midwest or the East.

In the meantime, she's putting in a lot of hours.

"It comes with the territory," she says. "But I try to have some time during the week away from here."

A northwest-southeast cross section (without vertical exaggeration) of the northern end of the Kuril-Kamchatka arc. The locations (small symbols) and directions of rupture propagation (large symbols) of earthquakes are plotted. Notice that event Z is located west of the well-defined Wadati-Benioff zone and indicates that a portion of the subducted slab is deflected or detached at the base of the upper mantle. The original hypothesis of wholesale slab penetration into the lower mantle [Jordon ,1977] was based on earthquakes in this region.



Northern Kuril-Kamchatka

Alumni News

GeoSciences is for alumni and largely about alumni. Please take the time to complete and return the information form you will find at the end of each issue. Just as you like to read about classmates and other alumni, they'd like to know more about you. Your news is important to them and to us in the Department. Send a recent photo along, too, but let us know if you want it returned.

The following notes are divided by decade. If you were affiliated with the Department part of one decade through to the next, you will be listed according to the last degree granted. Within each decade, items are listed in yearly sequence, not alphabetically.

FACULTY

The Distinguished Member Award of the Clay Minerals Society (CMS) was made posthumously to Professor **John Hower** at the society's annual meeting in Columbia, Missouri, last October. Hower was head of the UIUC Department of Geology from 1978 until his death in 1983. He was president of the CMS in 1976 and was associate editor of *Clays and Clay Minerals* for five years.

FIFTIES

Although he retired from his full-time duties at Syracuse University's geology department in 1989, Professor Emeritus **Ernest H. Muller** (M.S. 49, Ph.D. 52) continues to conduct research and teaches an occasional course. His research focuses on the Bering Glacier in Alaska and on New York glacial geology. He lives in Syracuse, New York.

SIXTIES

An Honor Award was presented to **Roger G. Wolff** (M.S. 60, Ph.D. 61) by the secretary of the interior at the 55th Departmental Honor Awards Convocation May 8 in Washington, D.C. Wolff lives in Bluemont, Virginia.

After retiring from the U.S. Geological Survey in September 1990, **William E. Wilson** (Ph.D. 63) has moved to Switzerland where he will be working on a Swiss nuclear waste disposal program for one to two years.

Known for his expertise on international land and water management issues, **Mohamed T. El-Ashry** (M.S. 63, Ph.D. 66) was named director of the World Bank's Environment Department. He previously was senior vice president of the World Resources Institute, an independent policy research center in Washington, D.C. El-Ashry also serves as senior environmental adviser to the United Nations Development Program and special adviser to the secretary-general of the 1992 "Earth Summit," the U.N. Conference on Environment and Development.

Dave Ripley (B.S. 65, UIC M.S. 72) is the hydrologist manager for the North Dakota State Water Commission in Bismarck where he manages the state groundwater resources. Ripley has been active in various Bismarck and North Dakota soccer organizations as an organizer, coach and referee. He's also involved with the creation of a new ninety-five-acre multi-use recreational park in Bismarck.

SEVENTIES

Ron Stieglitz (M.S. 67, Ph.D. 70) is associate dean of graduate studies and research in the Department of Geology at the University of Wisconsin-Green Bay.

Tom Chamberlin (M.S. 71, Ph.D. 75) is in the Department of Earth, Space and General Sciences at the University of Indianapolis.

Tom Perkins (B.S. 72), his wife, Maxine, and their two boys are still living in Jakarta, Indonesia. Perkins was involved in a recent substantial gas discovery in Iryan Jara.

Elisabeth Brouwers (B.S. 72, M.S. 77) works for the U.S. Geological Survey in Denver, Colorado. She conducts research on Tertiary rocks of the Pacific Basin, using ostiacodes to reconstruct paleogeography, paleoenvironments and biostratigraphic zonations. Her current field efforts have been in Alaska, Pakistan and Abu Dhabi, examing Pliocene and Paleocene-Eocene rocks.

Brouwers received a Ph.D. in 1985 from the University of Colorado.

Still writing and editing on a free-lance/contract basis, **Susan (Wunder) Wintsch** (M.S. 74) of Bloomington, Indiana, recently has written about solar neutrinos for the National Science Foundation's *Mosaic Magazine* and a special report on dolphins for World Book Encyclopedia's *Science Year*. She is also doing some editing for the Congressional Office of Technology Assessment. Wintsch received an M.A. in journalism from Indiana University in 1977.

"I've gotten back into dairy farming!" she writes. "It began gradually, milking occasionally at a local dairy farm. Now I milk five to six times a week and have eight growing heifers.

"Son Timmy (5 years old) loves the eighty-acre 'playground.'"

Bill Rice (M.S. 74) is president of the school board in Kingsford, Michigan. He remains with Wisconsin Electric in its hydroelectric power enterprise in Iron Mountain, Michigan.

David W. Larson (B.S. 75) works with the Communications Consortium, a public-interest media relations company in Washington, D.C., that promotes progressive public policies such as an energy-efficient economy, access to health care and reproductive rights.

Larson received a master's degree in 1977 from the University of Wisconsin-Madison.

Christine (Hettlinger) Griffith (B.S. 75) is currently involved in exploration in California for Shell Oil Company. She also has worked on projects in Oklahoma, west Texas and the Gulf Coast for Shell. Griffith has two sons, Matther (7) and Michael (5).

She received an M.S. from the University of Wisconsin-Madison in 1977.

Mark Reinbold (M.S. 77) is with the Colorado Geological Survey, working on various environmental projects. His second child, Sarah, is 21 months old; and son Adam is 4 1/2.

Steve Tissue (M.S. 77) is the division geologist for Chevron in Lafayette, Louisiana, as well as a Cub Scout den leader.

Jay Scheevel (B.S. 79) and his wife, Mary Beth, live in Livermore, California. Scheevel is engaged in an exploration venture off the shore of Namibia.

EIGHTIES

Sandra (Sopkin) Haupt (B.S. 80) is an energy policy analyst for Central Vermont Public Service Company, the state's largest utility. She also has an M.S. in geophysics from Penn State and an M.S.L. in environmental law from Vermont Law School.

On May 16, Haupt gave birth to Evan Samuel. "Evan is the Hebrew word for rock," she notes.

Curator of geology (paleobotany) at the Illinois State Museum **Richard L. Leary** (Ph.D. 80) received a Fulbright Research Award which will fund travel to Argentina and Brazil later this year. He will conduct research at several institutions during his three-month stay in South America. Leary will examine collections of fossil plants, do field work and discuss paleobotanical research with colleagues. He will also examine early- and pre-*Glossopteris* floras of Brazil and Argentina, including possible Stephanian Euramerican elements.

Leary has been at the Illinois State Museum since 1962. His research deals with Early Pennsylvanian non-swamp ("upland") floras, paleoecology, paleogeography and evolution of upland taxa such as *Lesleya* and *Megalopteris*. Last year, Leary's paper stating that *Lesleya* is the earliest known ancestor of cycads, a group of plants living in the tropics today, was published in *Science*.

His research also deals with broader, more theoretical aspects of paleobotany.

Alice Benkovich-Shilhanek (B.S. 81) and her husband, Jay, have a girl, Kelly Marie, who was born July 25, 1990. She was seven pounds, three ounces and twenty inches long. Benkovich-Shilhanek is still working on her thesis but has taken a leave of absence from a geotechnical job.

Becky (Birch) Mudge (B.S. 81) had a girl, Rosemary, in May. She also enjoyed a visit with **Julie Wulff** (B.S. 82, UIC M.S. 86) in New Zealand after the Brachiopod Symposium in Dunedin last January. Becky will be moving from Sydney to Melbourne, Australia.

Steven L. Forman (B.S. 81) received his Ph.D. in geology from the University of Colorado-Boulder in 1986. He is now on the faculty at Ohio State University, pursuing his research and teaching interests in

quaternary geology and geomorphology. Forman went to the Soviet Arctic this summer to unravel the glacial history on Franz Josef Land. He says he hopes to work with Hilt Johnson in the future on the loess stratigraphy in the Midwest.

He also reports that wife **Judy (Schneider)** (B.U.P. 81) and 3-year-old son Jacob have made the transition from Colorado to Ohio.

Grant Olson (B.S. 81, B.S. 85, D.V.M. 87) of Sturgeon Bay, Wisconsin, is a small-animal veterinarian at Door Animal Hospital treating dogs, cats, birds, ferrets, bunnies and exotics. "No more cows, horses, anticlines, synclines and thumper trucks," he says.

He also offers this invitation: "Want to go sailing? Meet me in Sturgeon Bay. Beautiful limestone outcrops, glacial landscapes, erratics along the way!"

Sharon Geil (B.S. 82, A.B. 82) is an environmental protection specialist for HQ/Military Airlift Command at Scott Air Force Base in Illinois.

Kathleen Marsaglia (B.S. 79, M.S. 82) is an assistant professor in the geological sciences department at the University of Texas-El Paso. She received a Ph.D. from UCLA, participated on the ODP cruise to Izu-Bonin ARC and started teaching "on the border" all in 1989. She married Bob Merrilees in 1988.

"I love the weather and the friendly people in the Southwest," she says. "But I miss the ocean!"

Carolyn (Arden) Bresler (B.S. 83) has been the publicity and publications coordinator for The Chicago Academy of Sciences for the last two years. She's also a free-lance writer and editor and is a former assistant editor for *Outside* magazine.

She recently joined the editorial committee of the National Association of Professional Environmental Communicators. "I firmly believe that all scientists should learn to communicate better with the press and the general public by using simpler language (i.e. drop the buzzwords) and real-life examples," she says. "I commend Dr. Sandberg for his efforts to introduce computers to basic geology courses: thank you for caring about educating the layperson."

In 1987, she married filmmaker and writer Scott Bresler. The couple live in a coach house in Chicago with two cats and a dog. Close friends and field campers George and **Kari (Bechtel) Graettinger** (B.S. 84, M.S. 89) live nearby.

"Like other graduates, we have sweet memories of Sheridan, Wyoming," Bresler says. "Some of my favorites—wandering over green hills, fighting thorny brambles and traversing rivers completely lost; taking cover in our red Suburban to dodge a cattle drive; stomping divots at a polo match; scrambling up a muddy river bank to come face-to-face with a rancher, his rifle and a slobbering Saint Bernard; and surfing down Mount Thermopolis. I learned as much about ranch life, wildlife (mad cows and rattlesnakes and bears, oh my!) and life in the wild as I did about rocks."

Peter Leffler (B.S. 86) is a hydrologist for the environmental consulting firm of J.V. Lowney & Associates in Palo Alto, California, where he performs soil and groundwater quality investigations. He received an M.S. in hydrogeology from the University of Nevada-Reno in 1989. Leffler was married in Malaysia last June, and then the couple returned to the United States to make their home.

Former staff member and now president of Cornell University in Ithaca, New York, **Frank Rhodes** (Hon. 86) delivered the 1991 commencement address at the University of Michigan.

Edward J. Kandl (B.S. 87) received an M.S. in geology last year from Southern Illinois University. He is now assistant hydrologist and water quality specialist for the Yakima Indian Nation's Water Resources Planning Program in Toppenish Creek Basin on the Yakima Indian Reservation, including balance of salts and sedimentation and erosion. He also assists in the groundwater program.

Kandl hopes to get the funding to present some of the findings of the Water Resources Program at the Geological Society of America (GSA) meeting in San Diego, California.

Last year was hectic, Kandl reports. He worked for the Bureau of Land Management in Vale, Oregon, and then was laid off. He finished his master's thesis and took a job with the U.S. Forest Service at Mount Hood National Forest. He then graduated from SIU and attended GSA in Dallas, Texas. Then he was laid off from the forest service ("more budget woes") and finally took a job with the Yakima Indians. "Hope this one lasts," he says.

Please take a few moments to let us and your classmates know what you've been doing: promotions, publications, election to office, marriages, parenthood, moving, awards. We'd all like to hear from you!

Name _____ Response date _____

Home Address _____ Office Address _____

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Home Phone _____ Office Phone _____

Degrees from Illinois (with year) _____ Degrees from other universities _____

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Present employer and brief job description _____

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Other news you would like to share _____

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Your comments on the alumni newsletter _____

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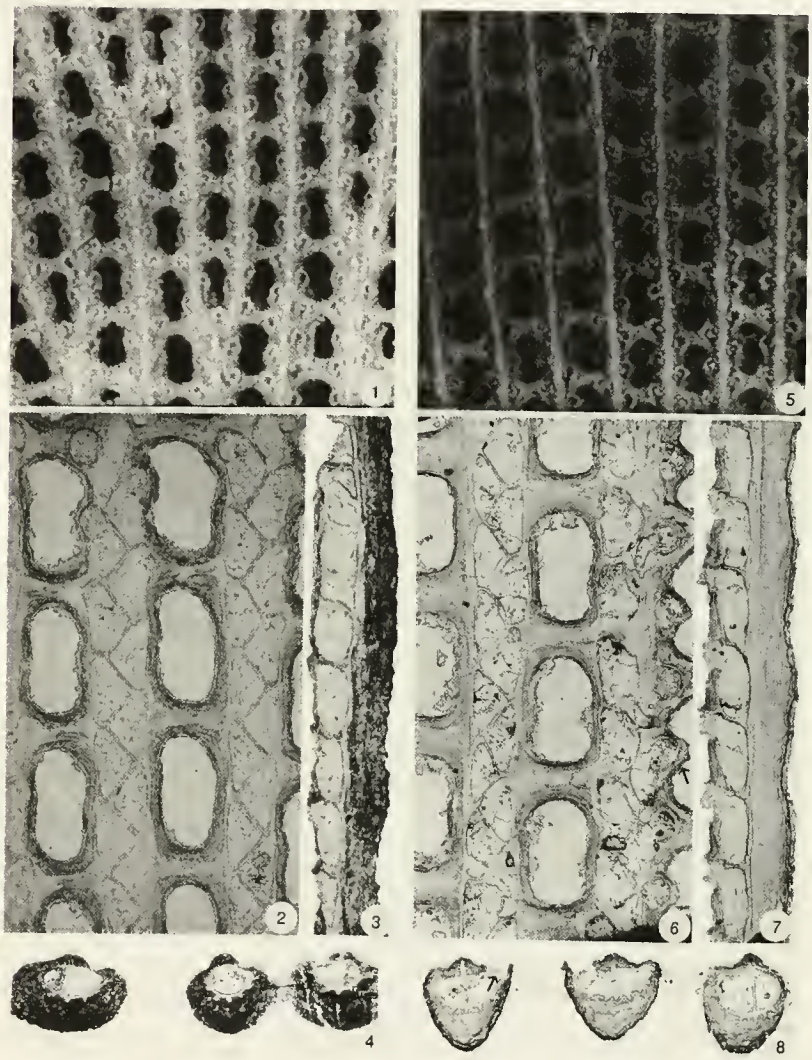
GeoSciences

Department of Geology
Alumni Newsletter
Spring '92



UNIVERSITY OF ILLINOIS

GeoSciences

Alumni Newsletter SPRING 1992

Cover Photograph: Rectifenestella limbata (Foreste) from two (of Eric Holdener's Master Thesis) localities in east-central Kansas. Figures 1-4 are from (Eric's) locality A; 5-8 are from (his) locality B. Figures 1 and 5 are views of colony exterior surfaces, whereas 2-4 and 6-8 are various views of the colonies' internal structure. Eric recognized discrete morphological differences within his species between the two localities.

GeoSciences is the Alumni newsletter for the Department of Geology, University of Illinois at Urbana-Champaign. It is published in September and February of each year.

Staff: Department Head: R. James Kirkpatrick; Asst. to the Head: Peter A. Michalove; Editor: Vanessa Faurie; Designer: Jessie Knox; Admin. Secretary: Patricia Lane.

Message from the Department Head

R. James Kirkpatrick

Dear Alumni and Friends,

The University of Illinois and all of higher education are presently in a state of flux, as are the organizations for which many of you work. For the University, and especially for the Geology Department, this situation presents both opportunities and problems. Like many of you, we are being asked to do more with less; but at the same time we are being expected to change, so there is an opportunity for improvement.

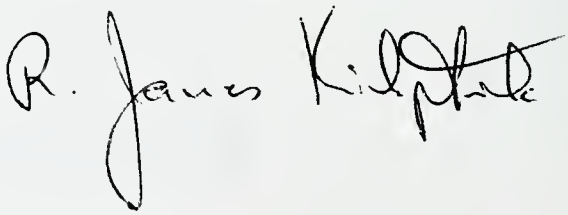
For the Department as a whole, the most pressing issue is to make a significant contribution toward improving scientific literacy among the University's student body and, thus, our portion of the general population. Despite the fact that our students are among the most qualified in the country, many of them come to us with no coherent picture (or worst yet, a distorted one) of how the earth works and what it means to think about natural phenomena in a scientific way. And it is no news that the citizens of this country will be asked to make progressively more public and private decisions concerning resources, the environment and the relationship of Homo sapiens to them.

Over the past few years, the Department has been aggressively pursuing improvements in our courses for non-science students, and these efforts are clearly paying off. Enrollment in these courses is now at the highest it has been in the time for which we have records, and we are teaching just about as many students for which we have the time and space. At the present level of enrollment, something in the order of 25 percent of the University's undergraduates will take a Geology course. The new courses and the revamped old ones are accessible and interesting to students not majoring in a science and yet provide a solid, factual background and insight as to how to investigate the earth in a scientific way.

Fortunately, this improved teaching has not come at the expense of graduate education and research. External funding continues to increase, and we are pleased that most of our students are able to find quality employment even in these tough times.

On other matters, our recovery from the fire/flood is now essentially complete, except for minor painting. All the damaged space is repaired and fully occupied again, and things are back to normal (whatever that is!). Additional remodelling of the Natural History Building continues. We are presently remodelling the former mineralogy lab and classroom into a geophysics lab and general-use classroom (perhaps eventually to be a computer classroom) and should soon begin remodelling the Departmental computer center.

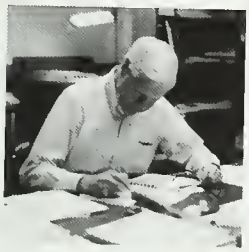
I also want to take this opportunity to thank Alan Scott for serving as chair of the GeoThrust Committee for the past two years and to welcome Jack Threet as the new chair. Alan did a great job, and I know that Jack will do the same. I also want to thank all of you who have contributed to GeoThrust. Your generosity is truly an important factor in allowing us to continue to strive for excellence even in difficult times.



GeoNews

"I guess I felt I could make a difference to faculty and students."

- Hilton Johnson -



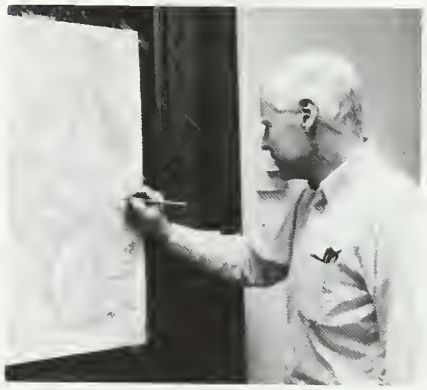
Hilt Johnson fills new associate head post

In order to improve the quality of the education offered by the Department, Head James Kirkpatrick appointed Professor **W. Hilton Johnson** (M.S. 61, Ph.D. 62) to the new position of Associate Head last August.

Johnson's responsibilities include working closely with teaching assistants in the supervision and assignment of their duties; helping coordinate course offerings, schedules and classroom assignments; and coordinating departmental committee activities relating to student affairs.

Basically, Johnson said he's "trying to make things go easier for the faculty and staff and students" in the Department.

"I am extremely pleased that Hilt has agreed to take on the responsibilities of Associate Head," Kirkpatrick said. "Enrollments in our general education courses have increased so much that more extensive management of our instructional activities was sorely needed. Hilt is very experienced at educational management and understands well what it takes to provide a high-quality educational environment."

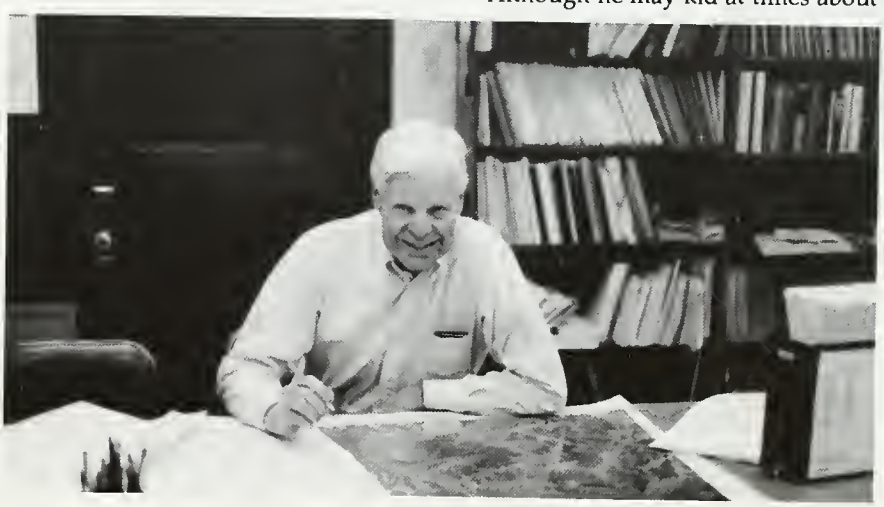


From 1969-77 Johnson held a similar position in the Department as Educational Coordinator. In addition to his new duties, Johnson continues to teach graduate courses in geomorphology, glacial geology and quaternary geology.

He also has been developing the course and lab manual for Geology 104, "Geology of National Parks and Monuments," as a general education class. "We use parks as a starting point to learn about geology," Johnson said. "That's been a fun course."

"The position gives students access to someone else to go to if they have a problem. I want to try to make the Department better from an educational standpoint."

Although he may kid at times about



being in the Department too long, Johnson is serious about the intent of his new position.

"I guess I felt I could make a difference to faculty and students," he said, "to do things that no one else has been able or had the time to do. (The position) gives students access to someone else to go to if they have a problem. I want to try to make the Department better from an educational standpoint."

Dan Blake appointed director of Museum of Natural History

Professor Dan Blake (B.S. 60) became the new director of the Museum of Natural History last July. He now splits his time between the Department and running the museum.

His main goal for the museum is to broaden its emphasis as a scientific museum to better serve the college, the University and the outside community. As a part of its new scope, a large mural of the early formation of the solar system is underway. Blake also is developing a "living room," an interactive place where people, especially children, can handle and look at items, observe living animals and conduct experiments--with light and magnetism, for example.

Blake said the museum will also try to incorporate several valuable collections into the museum, such as Albert Carozzi's petrographic collection and the paleontology collection. These collections will augment the significant herpetological, mammalogy and malacologic collections already in the museum. All collections are accessed by an international audience. A more developed first-floor area and some new lighting and paint will also help improve the museum, he added.

"It's fun," Blake said, who has been a Geology faculty member since 1967. "The museum is important to the University, to the public and for the collections."

Lois Pausch named Geology librarian

Although Lois Pausch (B.S. 58, M.S. 71) has been acting Geology librarian since September 1989, she now has claim to the official title as of last August.

Pausch found out early on in her career that teaching biology was not for her, nor was being a high school librarian. But the public service role she has in dealing with Department faculty, staff and graduate students suits her well.

"The people here couldn't be nicer," she said. "And I've had to learn the collection. I didn't start out with a geology background."

Pausch has worked in various library positions at the U. of I. since 1972, including assistant math librarian and mathematical statistics bibliographer, before coming to the Geology Library.

"Part of the reason I stayed was that my husband had a full-time position here, and being at the University afforded me the scope and intellectual challenge I was looking for."

The big task for Pausch now is to try to maintain the Geology Library's excellent reputation despite financial constraints that don't appear to be letting up in the foreseeable future.

"Our goal is to maximize the strengths of the library," Pausch said, "and try to keep it from eroding."

Last year's 10 percent budget cut meant cancelling "far too many journal titles." But with the consultation of faculty and staff, the titles marked for cancellation were the least painful ones to lose. Any necessary cuts for this year are not known yet.

"It's a case of trying to work so that things we cancel will be those that will hurt the least," Pausch said. "But any more cuts will be getting to the meatier parts of the collection.

"The Geology Library has a reputation for being very comprehensive. (The budget crunch is) unfortunate, but it's happening nationwide."

Alumna Mosher receives Outstanding Educator Award

Sharon Mosher (B.S. 73, Ph.D. 78), a professor in the Department of Geological Sciences at the University of Texas (UT) at Austin, received the 1990 Outstanding Educator Award from the Association for Women Geoscientists Foundation.

She teaches courses in structural geology and petrology, earth tectonics, conducts field camps and chairs thesis committees. Mosher has received numerous department awards since she first arrived at UT as an assistant professor in 1978, including the Stokes Centennial Teaching Fellowship (each year since 1986) and the Knebel Distinguished Teaching Award in 1989.

Her work in professional and university organizations include chairing the Geological Society of America's Division of Structural Geology and Tectonics and serving as associate editor of the *GSA Bulletin*.

The *Journal of Geological Education* published various comments of support from Mosher's students and colleagues.

"She provides strong moral support to help students through difficult or adverse situations," said Karen E. Carter, a Ph.D. student at UT and now a postdoctoral fellow in Italy. "Through this type of support, her students learn how to reach for opportunities, prepare well-received lectures and write successful grant proposals, each important in terms of career advancement."

Professor of structural geology at UT, **Mark P. Cloos** (B.S. 76), said, "She is well known for going the extra mile for all students by helping them with their thin-section petrography, commenting on their grant proposals, reviewing and editing their manuscripts and writing letters in their behalf."

Mosher thanked many people in her acceptance speech for the award, including U. of I. professors Don Henderson, Dave Anderson and Ph.D. supervisor Dennis Wood.

"I never could have been a successful educator without very good students or excellent colleagues who feel as strongly about education as I do," Mosher said.

Three classrooms get face-lift

New remodelling projects in three classrooms were recently completed in the Natural History Building before the start of the 1992 spring semester.

Room 109 has been refurbished as a computer classroom. The atmosphere is brighter for students and cleaner for computer equipment. Electrical cords are suspended from the ceiling to allow for optional hookups for computers, electronic microscopes and other equipment that is not always in use. The cords can be raised out of the way when not in use.

Nearby in Room 106, geophysics Professor Albert Hsui's new NeXT computer lab is up and running. The biggest problem in its renovation was insulating the ceiling to eliminate dust and dirt that can damage or cause malfunctions in the computers. This lab is the tangible benefit of Hsui's "NeXT at Illinois" grant he recently received with which he is developing hands-on exercises to demonstrate how surface geophysical measurements change as subsurface geology changes. The NeXT computers can handle the additional amounts of data and computations needed for these exercises.

The paleontology and sedimentology classroom in Room 120 was spruced up to make more room for an increase in undergraduates taking geology courses. Some cumbersome tables with unnecessary cabinets were replaced with new tables that allow more students in the room. The increase in students taking 100-level courses is attributed to the new introductory course developed by Steve Marshak, the computer-based instructional materials developed by Marshak and Philip Sandberg, and the new University-wide general-education requirements. Some of the 100-level courses meet the physical science requirement.

The funding for these three room remodelling projects came from some $145,000 in University funds that was left over from last year's remodelling project. Two other projects on line, meanwhile, include renovating the general department computer lab or moving it to another room so that it can also function as a classroom and a new computer lab for Professor Philip Sandberg's ten recently acquired Macintosh IIsi computers.

HONORS AND AWARDS

Morris M. & Ada B. Leighton Award
Supports field work for graduate students
Honn Kao, geophysics
David Grimley, quaternary geology

Alumni Fellowship
Support for year from GeoThrust donations
Amy Berger, hydrogeology

Harold Scott Scholarship
Rewards outstanding students
Ming Kuo Lee, hydrogeology

Profile

Morris Leighton

"I accompanied my father on trips, and even today, in going back over these areas, I recall his words in explaining the extent of a lake bed, for example. It must have made a much bigger impression than I even realized at the time."

Head of ISGS follows father's lead

While growing up in Urbana, **Morris W. Leighton** (B.S. 47) didn't know he was going to follow in his father's footsteps as chief of the Illinois State Geological Survey on the U. of I. campus. His intitial interest was in chemistry.

"The reason I got into geology was the result of a request of my father," Leighton said. "He said, 'Brud (a family nickname), I would like for you to take a course in geology so you'll have an appreciation of your surroundings.' And I said, 'Well sure, I'll do that.'

"I accompanied my father on trips, and even today, in going back over these areas, I recall his words in explaining the extent of a lake bed, for example. It must have made a much bigger impression than I even realized at the time."

Leighton majored in chemistry, with a minor in geology, at the U. of I. He was in the Navy V-12 officer's training program that was transferred to the university from Indiana State Teacher's College.

His master's and Ph.D. work was completed at the University of Chicago involving field mapping of a hard rock complex, chemical analyses of the distribution of elements and how the rock units got where they did. "The study of emplacement of grinites was a popular issue in those days," he said.

For the next thirty-two years, Leighton worked throughout the world for Exxon Corporation or one of its affiliates. His first position was as a research geologist for the Carter Research Lab in Tulsa, Oklahoma.

At the time, Leighton had no desire to work abroad. But assignments in Sicily, Libya and Switzerland changed that. He was conducting work on carbonate rocks, doing basin analyses and working to develop new methods and ideas to find hydrocarbons, and therefore improve exploration success.

It was an exciting time. While in Switzerland heading up Exxon's (then Standard Oil of New Jersey's) first overseas study group, his group learned of the discovery of the largest gas field yet found in The Netherlands. His group then put together the first analysis for Exxon identifying and mapping oil and gas plays in the North Sea, which of course later became a major petroleum-producing site.

"That was like Christmas every day," Leighton said. "It's a tremendous feeling."

Leighton's family joined him in Switzerland, and they all settled into life in Europe. His youngest of three daughters attended a French-speaking kindergarten class and could speak the language fluently. Leighton again found himself, as his father once suggested, developing an appreciation for his surroundings.

There were advantages to raising a family on the go, Leighton said. His children, he believes, have an independence and poise about them that enables them to adapt to different

cultures easily and make decisions for themselves. Yet he also believes there are advantages to having a deep sense of roots in one area such as he developed from growing up in Urbana.

The family did return stateside and then went to New York City in the mid-sixties. Leighton was geological adviser and coordinator of other study groups established by Exxon around the world. Four years of long commutes into and out of the city were enough for Leighton to request a change of assignment.

"The chair I sit in is his chair. I think he'd be surprised and pleased."

Shortly afterward, the family headed for Sydney, Australia, where Leighton was exploration manager for Esso Australia Ltd. and again enjoyed the excitement of finding oil and getting it on production.

A brief time at Esso Production & Research Company in Houston followed four years later until Leighton became chief geologist in 1974 for Esso InterAmerica in Coral Gables, Florida, helping that affiliate conduct exploration ventures for Central and South America. The family lived there for the next nine years--their longest stay in one place since the initial work with the research lab in Tulsa.

Leighton enjoyed a long and happy career with Exxon Corporation. That's why it was such a difficult decision when his father's old job, head of the Illinois Geological Survey, became available with the retirement of Robert E. Bergstrom.

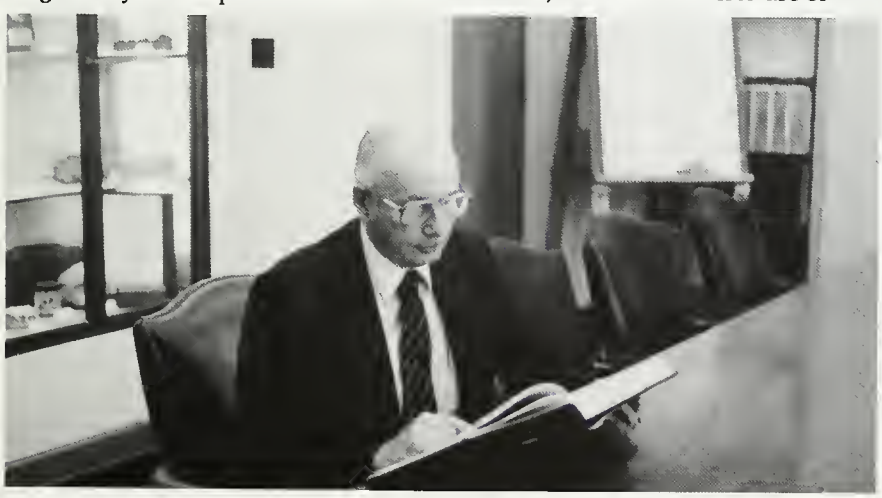
"The attraction of coming back to Urbana was too strong," Leighton said. "It seemed the thing to do."

So in September 1983, Leighton walked back into the old Natural Resources Building that he used to walk into as a boy with his father when its walls were first being constructed.

Morris M. Leighton was chief of the ISGS for thirty-one years from 1923-54.

"The chair I sit in is his chair," Leighton said with a small grin that revealed a great amount of pride. "The memories did flood back. I think he'd be surprised and pleased."

The mission of the ISGS, to study the geology and mineral resources of Illinois and report its findings to the public, has remained essentially the same in the time that the two men first took its helm. But today there are more complex issues with which to deal, according to the current chief. The problems of the state have expanded with the increased awareness of the environment, geological hazards, the need for wiser use of natural resources, the issues of waste management and the need for groundwater protection.



"I wouldn't trade thirty-two years with Exxon for anything." he said, "and I wouldn't trade what I'm doing now."

Such issues are often politically and emotionally charged, but it is the Survey's role to report its findings objectively and maintain its independence.

"It's tough to do sometimes," Leighton said. "But we have to maintain our credibility in science. We produce the data and let the chips fall where they may."

Among the top items on the Survey's agenda is to develop a plan for creating more detailed geological maps of the state that are necessary for better siting and identification of favorable areas for resources. Another goal is to maintain coal, oil and gas as viable fuels--for example, finding ways of removing sulphur from Illinois' high-sulphur coal and encouraging the wise use of coal so that miners can keep working.

Striking a balance between a healthy economy and a healthy environment, Leighton said, is really at the heart of the ISGS and its employees, who have expertise in a wide variety of areas.

"That's what it takes to tackle the complex problems we're dealing with today," Leighton said of the multidisciplinary makeup of the organization. "That's what makes this Survey tick. It's the people."

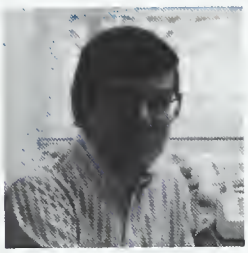
Leighton's job with the Illinois Geological Survey has fit in well with his long record of professional accomplishment and satisfaction.

"I wouldn't trade thirty-two years with Exxon for anything," he said, "and I wouldn't trade what I'm doing now."

Profile

Stephen Altaner

"There's a lot of competition in (geology). The U. of I. has a lot going for it in the degree of collaboration and open ness, There's not a lot of, well, I call it chest-puffing."



Teaching and research go hand-in-hand

His sabbatical was for the fall 1991 semester, but Associate Professor **Stephen Altaner** (Ph.D. 85) didn't feel like he was on sabbatical until about December.

What with fixing broken equipment, receiving visitors and travelling some himself, it was only in the beginning of December that Altaner was able to start any writing.

After receiving a 1991 University Scholar award, Altaner took a break from his teaching load in part to conduct some field work with Professor Richard Hay and graduate student Dave Finkelstein in Creede, Colorado, in the San Juan mountain range. The three geologists are looking at volcaniclastic sediments from two drill holes that are part of the Continental Scientific Drilling Program.

Now with the spring semester underway, Altaner is back with his graduate students, researching the mineralogy, petrology and geochemistry of clay minerals and looking at their crystal structure to determine their origin, occurrence and significance in their natural environment. But the teaching isn't a problem because Altaner has always looked upon graduate students as a tremendous resource, not a necessary evil.

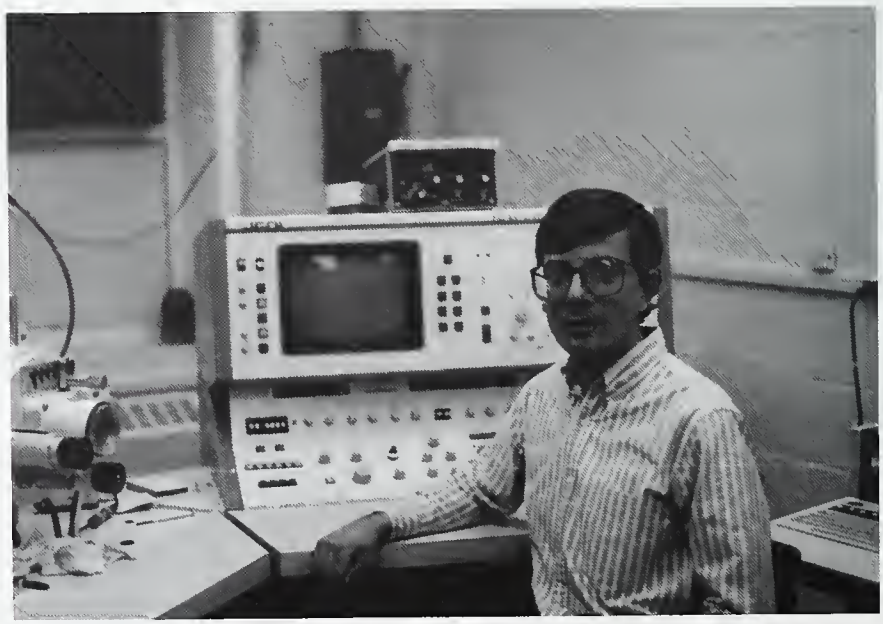
Research and teaching are happily intertwined in his job. And that philosophy is in part thanks to some important influences in Altaner's education while working on his Ph.D. at the U. of I. in the early eighties.

His initial adviser was then-Department Head John Hower, from whom he learned about clay mineralogy, how to think critically and how to approach a problem.

"He gave an enormous amount of personal interaction with graduate students," Altaner said. "His philosophy rubbed off to some extent. He thought teaching graduate students was one of the most important things you could do because then they would go off and teach others.

"He was remarkable," Altaner added. "You couldn't help but get excited about working."

Hower died in 1983, and the beloved Department Head was sorely missed. As a way to help cheer



Altaner uses a scanning electron microscope.

up the Department, Altaner and his wife and fellow graduate student, Norma Vergo (M.S. 84, now deceased), had the idea to introduce a new member of the staff in the late part of 1983: a two and a half-month-old shepherd-collie mix named Lana from the Champaign County Humane Society. She quickly became a permanent fixture in the offices of the Natural History Building as the official Geology Dog, and her photo was included on the staff board alongside her fellow Department members.

Occasionally, the University Police remind Altaner that dogs aren't allowed in University buildings, but Lana is careful to stay out of the way and is usually quiet and discreet.

"Stress is what you make of it. My job can be extraordinarily distracting. You have to change focus rapidly and be efficient at short bursts."

Just after taking up daily residence in the back offices of the basement, however, Lana thwarted a would-be burglar during the lunch hour when everyone was gone. The suspect, who was six-foot-six, was the one to alert police because Lana had pinned him in a corner, but he was still able to reach a phone and call for help. When Altaner and his colleagues returned to their office, the dog warden was there to greet them with a fine for having a loose dog. Nothing happened to the man (after Lana was through with him), but Altaner knew he had no business being in their office.

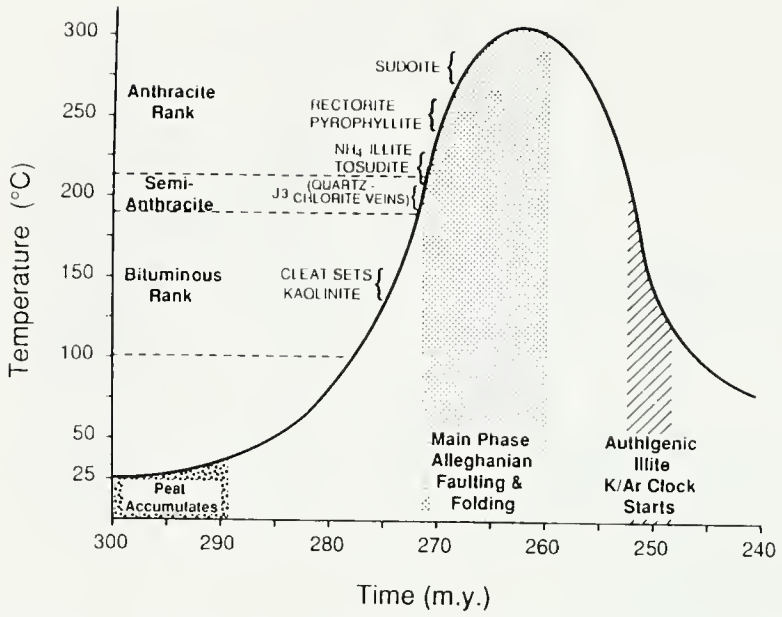
When Altaner is working, Lana is a calming influence. She also accompanies him to his graduate classes.

"One or two times this has happened," Altaner said and began to laugh. "Toward the end of class I'll say, 'I have one more thing to say before you go ... ,' and Lana let out this long groan. It was perfectly timed."

With a companion like Lana, the on-the-job stress that can build up is less troublesome.

"There's a lot of competition in (geology). The U. of I. has a lot going for it in the degree of collaboration and openness," Altaner said. "There's not a lot of, well, I call it chest-puffing.

"If you're successful, particularly in getting grants, then it's not a high-stress job," he added. "Stress is what you make of it. My job can be extraordinarily distracting. You have to change focus rapidly and be efficient at short bursts."



ABOVE:
Schematic temperature-time history for diagenesis of coal-bearing strata in the Eastern Middle anthracite field of Pennsylvania. Bold curve is a schematic representation of the temperature-time path for the rocks. Brackets show approximate temperature range over which mineral reactions and jointing occurred. (from Eric Daniels Ph.D. thesis 1991).

Profile

Eric Holdener

"Fossils and rocks are tools that tell the story of organisms. It's always amazed me how much common sense is in geology. "It's challenging to make it interesting to (the students)," There's no problem with it being interesting to me."

Those fossils can tell an interesting tale

When **Eric Holdener** (M.S. 91) was growing up, he loved to play in the mud and poke around at fossils along the creek and in the woods by his Belleville, Illinois, home.

That's his explanation for how he became interested in paleontology, which he is studying at the U. of I. with Dan Blake.

He also relates the story his mother likes to tell. She says that when Holdener was about four years old, he saw the Sinclair Oil Company's dinosaur float in a parade in St. Louis, "and that's what started it."

But regardless how his interest started, Holdener hasn't been disappointed. He received his undergraduate degree in physical anthropology from Washington University in St. Louis. Then, not knowing what he was going to do with his degree, he had a brief diversion at the University of Michigan's law school for a few months.

When Holdener arrived at the U. of I. in 1988, it didn't take him long to start making a name for himself on campus. In the spring of 1990, he was honored with the Leighton Memorial Award, and in the spring of 1991, he received the Department's Outstanding TA Award.

"I always wanted to teach," Holdener said, dressed casually and sitting at a lab table in his basement office in the Natural History Building. "This stuff kind of comes naturally."

He is popular with his students because he can present all the scientific information so that it makes sense to non-geology majors as well as the majors by using language and contexts they can understand. He says he tries to relate the past processes to things that occur today. During a discussion in his "History of Life" introductory course, he may ask students where they would find gravel today. Near creek beds, they immediately answer. And eventually the students begin to make interpretations of the data.

Holdener also likes to use an anecdotal approach to teaching. After all, he says, rocks and fossils merely tell a story.

"There's this thread of time that runs through that makes it a story," he says. "Fossils and rocks are tools that tell the story of organisms. It's

Holdener uses an Ultraphot microscope.

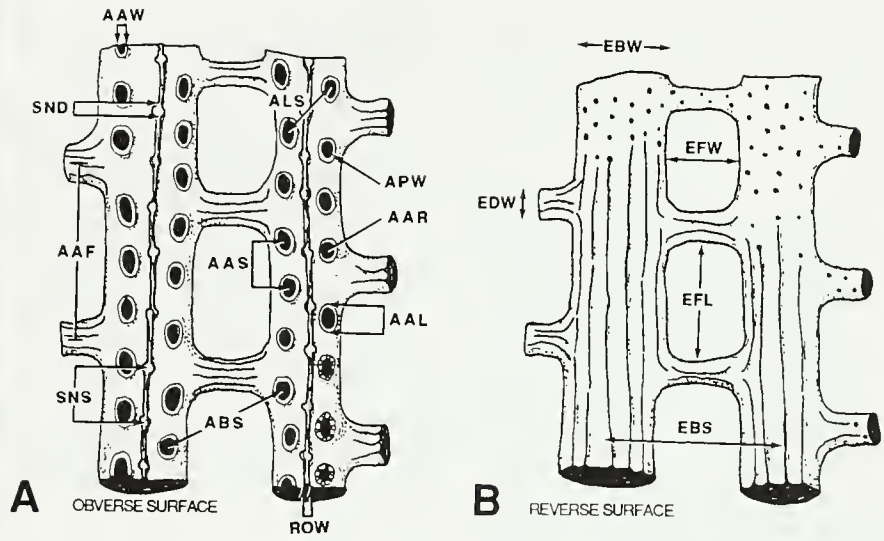


Figure 1-View of generalized fenestrate bryozoan (approxiamtely x80) illustrating exterior morphometric characters (modified from Snyder 1984, 1991).

always amazed me how much common sense there is in geology.

"It's challenging to make it interesting to (the students)," he adds. "There's no problem with it being interesting to me."

Holdener concentrates his research attentions on fenestrate bryozoans--extinct, marine organisms whose remains he has collected from 300 million-year-old rocks in east-central Kansas. On a fingertip, they are fragile, thin, tan-colored flecks; but under a microscope, they are beautiful, intricate, geometric structures.

He has recently begun his Ph.D. project--to analyze morphological variation within and among several species of fenestrate bryozoans to better understand the evolutionary process.

"I'm not planning to get out of here soon," Holdener says and laughs, not expecting to finish his doctorate until 1994 or '95.

"I'll try to make sense of what I see. It's not frustrating to have a project change, that's part of science. Hopefully, I can at least get pointed in the right direction."

He enjoys collecting the data, photographing, measuring and cutting

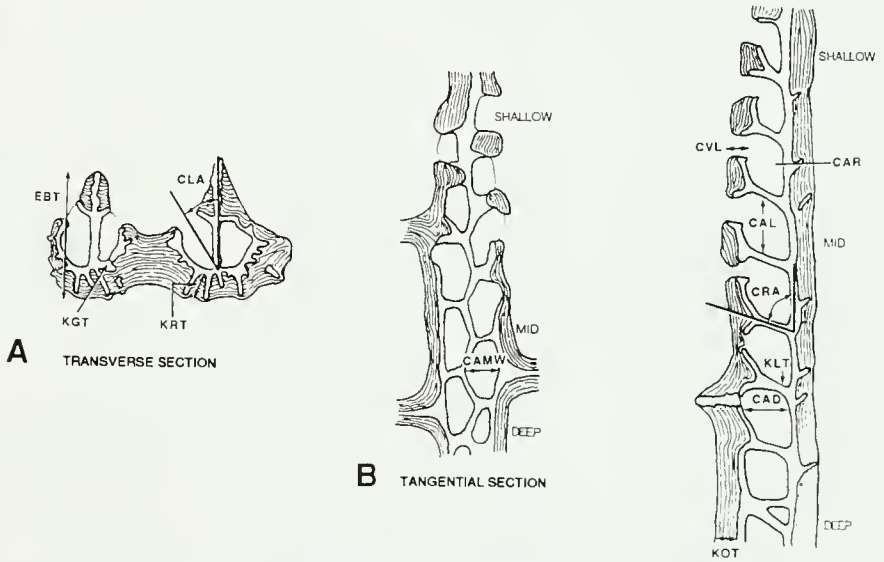


Figure 2-View of generalized fenestrate bryozoan (approxiamtely x80) illustrating interior morphometric characters (modified from Snyder 1984, 1991).

open the tiny bryozoans. But he wouldn't enjoy the research if he couldn't teach as well. That's what he hopes to do down the road--land an academic position and continue teaching.

Non-geologist friends still may kid him at times, making remarks now and then like, "So, Eric, do you work?" But he usually takes it in stride. And when somebody wants to know what he does, he simple says that he studies fossils to get a handle on evolution. Then if they want to know more, he'll go into the details.

"It's important to understand the history of the planet and the life on it. I'm probably not going to solve the world's problems," Holdener says and then laughs. "But then, many activities cause the problems of the world."

Alumni News

GeoSciences is for alumni and largely about alumni. Please take the time to complete and return the information form you will find at the end of each issue. Just as you like to read about classmates and other alumni, they'd like to know more about you. Your news is important to them and to us in the Department. Send a recent photo along, too, but let us know if you want it returned.

The following notes are divided by decade. If you were affiliated with the Department part of one decade through to the next, you will be listed according to the last degree granted. Within each decade, items are listed in yearly sequence, not alphabetically.

FACULTY

Former Geology Librarian **Dede Ward** works full time in his art studio in Anacortes, Washington, since taking early retirement from the University of Colorado in Boulder. He and wife Susan Parke, director of The Valley Museum of Northwest Art, live in Anacortes.

Little did **Thomas Anderson** and his wife, Nancy, know when they traveled to the Soviet Union last August that they'd be walking in on an attempted-coup-in-progress. Anderson had planned to meet with Soviet colleagues while Nancy, a U. of I. mathematics librarian, attended a conference in Moscow. Strangely enough, most of their business went on as scheduled, despite tanks and anti-coup demonstrators in the streets. "I did get out to one lab," Anderson told the Champaign-Urbana *News-Gazette*, "but then there was this revolution that got in the way." Although they considered leaving the country earlier than planned because of the turmoil, the coup soon crumbled and the couple continued their stay.

Associate Professor **Craig M. Bethke** (Ph.D. 85) and his wife, **Abigail Papenguth Bethke** (M.A.S. 88) welcomed their son, Henry Woodruff, who was born December 30.

Professor Emeritus **Harold W. Scott** had a guest column published last July in the Sumner *Press* titled, "Notion of U.S. oil 'glut' a serious misconception." Scott retired from the U. of I. in 1967 and was head of the University of Michigan's geology department for six years. He is a consultant to the petroleum industry throughout the world.

THIRTIES

D.C. Bennett (B.A. 31) attended his sixty-fifth high school class reunion in October. He used to work for W.T. Rawleigh, Procter & Gamble, Intercity BoxxPater and Honeywell. But now he'd "rather play than work." His various hobbies include motorcycles, hunting, trap & skeet shooting, golf and traveling in an R.V. His home base is Lakeland, Indiana.

FORTIES

Although he officially retired in 1981 (thirteen years with the U.S. Geological Survey, ten years with state geological surveys, ten years with universities and eight years with the Congressional Research Service), **Allen F. Agnew** (A.B. 40, M.S. 42) continues to work as a courtesy professor of geology at Oregon State University, to serve on thesis committees and to advise students in geology and geography.

With his "FFF" (Favorite Frau Frances), he headed the motorhome to Mesa, Arizona, in winter and to Oregon state parks in the summer. He writes that he enjoys being within one hundred miles of three children and eight grandchildren.

"I don't get to attend annual geological meetings regularly anymore," Agnew writes, "and thus regret not seeing UIUC colleagues there—both ancient mariners and the newer breed—but delight in reading their wisdom in the professional journals and news of their activities in this alumni newsletter."

Agnew lives in Corvallis, Oregon.

Willard C. Lacy (M.S. 40) is principal of Lacy & Associates, geological and geotechnical consultants. He was awarded honorary fellowship in the Australasian Institute of Mining and Metallurgy and received the Ben Dickerson Award for outstanding professionalism by the Society of Mining and Exploration. He lives in Green Valley, Arizona.

A memorial service in Livingston County Circuit Court, Illinois, last October honored **Darrell H. Reno** (B.S. 42, LL.B. 48), who died in 1989. He had served as an associate judge from 1971 until his retirement in 1982.

Robert C. Honea (B.S. 46, M.S. 48) lived in Santa Fe, New Mexico, from 1980-89 doing consulting geology in New Mexico, west Texas and the Four Corners area. In 1989 he moved back to west Texas and now lives in Abilene, still working in consulting geology.

Max C. Firebaugh (B.S. 47) of Mount Vernon is retired.

FIFTIES

Judd Noble (B.S. 50), of Columbus, Ohio, died April 16, 1991. He formed Noble Oil Corp. in 1972 and was active in many industry organizations, including the Ohio Oil & Gas Association, the Ohio Geological Society, the American Association of Petroleum Geologists and the Society of Petroleum Engineers.

Robert S. Roth (M.S. 50, Ph.D. 51) delivered the Sosman Memorial Lecture last May. The talk, "Phase Equilibria and Crystal Chemistry in Complex Oxide Systems" was sponsored by the Basic Science Division of the American Ceramic Society.

Roth is a research chemist in the Ceramics Division of the National Institute of Standards and Technology in Gaithersburg, Maryland.

Raymond F. McAllister (M.S. 51) is a professor of oceanography at Florida Atlantic University in Boca Raton. He has conducted various field studies in nearshore oceanography in the past twenty-seven years and recently did some field assistance with Project 19, trying to locate Flight 19 (Navy Avengers) lost in the "Bermuda Triangle."

He is president of McAllister Marine, which conducts light marine salvage, marine surveys, light marine construction, beach erosion studies and inspections. From 1988-90 he was on two advisory committees for Palm Beach County pertaining to artificial reefs and waterways regulation.

McAllister is a World War II veteran and lives in Lighthouse Point, Florida.

Wilford F. "Willy" Weeks (B.S. 51, M.S. 53) is a professor of geophysics at the University of Alaska in Fairbanks and chief scientist at the Alaska Synthetic Aperture Radar Facility. In his own words, Weeks "investigates the behavior of the world's sea ice covers and their geological consequences and confuses grad students and drinks wine."

Last austral summer, he spent three months in the Antarctic. This past winter he operated a project out of Barrow, Alaska. "I am too damn old to still be doing this," he writes, "but I figure that frost-bite slows down the aging process. How are things amidst the cornfields? I spent about twenty-two years in Champaign (I was a local), and THAT'S ENOUGH!"

Richard M. Winar (B.S. 53, M.S. 55) is manager of the GeoSciences Group for Entrix in Wilmington, Delaware, offering environmental and remedial services associated with investigations of contamination of soil, earth and groundwater. He lives in King of Prussia, Pennsylvania.

Charles W. Spencer (M.S. 55) formally retired from Texaco and now works with the U.S. Geological Survey. He has worked in southern Brazil. From 1986-89, he made ten trips to Hungary and worked with oil companies there on studies of oil and gas generation, migration and mapping stratigraphic traps. "I saw astounding changes in life and politics take place over the four-year period," he writes.

Spencer lives in Lakewood, Colorado.

Robert L. Brownfield (M.S. 55) is studying theology at Holy Apostles Seminary in Cromwell, Connecticut. He expects to earn his M.Div. degree and ordination to the Roman Catholic priesthood this spring. He will serve the diocese of Davenport, Iowa. His son and U. of I. engineering graduate, David, is currently a priest in Davenport.

Gene Thomas Fox (B.S. 59) retired after twenty-nine years as an earth science teacher, planetarium director and science/math supervisor in Virginia. He presently works part time with AGI in Alexandria, Virginia, to help extend its efforts in earth science education for grades K-12. Fox lives in Manassas, Virginia.

SIXTIES

James C. "Jim" Bloom (B.S. 60) of Walnut Creek, California, retired in August 1990 from Chevron after twenty-nine years as a geologist/geophysicist and manager. He and his wife are now proud grandparents and play a lot of golf.

Richard E. Smith (M.S. 60) is director of the Technical Assurance Division in the Office of Technical Management, Strategic Petroleum Reserve (SPR), U.S. Department of Energy headquarters in Washington, D.C. He is responsible for the environment, safety and health functions of the SPR's Project Management Office.

His oldest daughter, Andrea, is an engineer employed by Air Products and is married to a professor of material science at LeHigh University in Bethlehem, Pennsylvania. His youngest daughter, Melissa, is a senior at the College of Wooster (Ohio). No geologists, Smith writes, but points out that Melissa took two semesters of geology at Wooster.

John Moore (B.S. 61) was named by Illinois Governor Jim Edgar to be the state director of the Department of Energy and Natural Resources. He was previously director of the Division of Petroleum and Chemical Safety in the State Fire Marshal's Office and was honored for his environmental improvement efforts by the U.S. Environmental Protection Agency.

John Bredehoeft (M.S. 57, Ph.D. 62) was elected to the Russian Academy of Natural Sciences for his contributions to the study of ground water and its use as a water resource and for the study of water wells in predicting earthquakes. He is a senior research geologist with the U.S. Geological Survey in Menlo Park, California.

John W. Hawley (Ph.D. 62) is senior environmental geologist and manager of the Albuquerque Branch Office of the New Mexico Bureau of Mines & Mineral Resources, Office of the State Geologist, at New Mexico Tech in Socorro. He is also a faculty adjunct in geology and a collaborator with the Earth and Environmental Science Division of Los Alamos National Laboratory.

Daniel A. Textoris (Ph.D. 63) is a professor of geology at the University of North Carolina in Chapel Hill. He teaches and conducts research in sedimentary petrology.

He also serves on the landfill search committee for his home county, the board of directors of the water and sewer authority for the county and is helping on the Triassic basin site for a potential low-level radioactive material depository.

"Linda, three working/professional children, and two dogs and two cats are all fine," he writes.

Charles Norris (B.S. 69) was the first witness for Concerned Citizens for Clark County (Illinois) to be admitted by the Low-Level Radioactive Waste Facility Siting Committee. Norris is a research associate at the U. of I. He is a former employee of Shell Oil Company and a former geologic engineer at Tenneco Oil Corp. Upon the request of the citizens group, Norris began studying the Martinsville, Illinois, site in July 1989.

SEVENTIES

Terry (William H.) Wright (Ph.D. 70) is on sabbatical "in snowy, north New Hampshire, writing and doing field work after a year spent as visiting professor at Wellesley College teaching intro, structure and seminar on terrane analysis." Last June he married Lili Cunningham.

Don Ganser (B.S. 71) of Lakewood, Colorado, was named district manager and regional environmental director of ATEC Associates, Inc., Denver district and Northwest region, respectively. He is also chairman of the Rocky Mountain Section of the Association of Engineering Geologists.

John Darabaris (B.S. 73) was named a vice president of the Kearney/Centaur Division of A.T. Kearney Inc. international management consulting firm in San Francisco, California. His specialties include geologic engineering, environmental science and regulations, natural resource exploration economics, and environmental finance and accounting. He lives in San Ramon, California, with his wife, Elizabeth.

Christopher Ledvina (B.S. 74) is an assistant professor of earth sciences at Northeastern Illinois University in Chicago. He is developing a program in engineering geology and one in environmental sciences, as well as internship programs in coal mining geology.

Other activities include curating and directing fossil collection at the Mazon Creek locality near Braidwood, operation of the department's seismology station and coordinating Midwest and local field geology for majors and non-majors.

His research involves mathematical geology and geostatistics as it applies to coal mining geologic exploration. Ledvina designs software systems for PC-based and small mainframe interactive exploration and mapping work stations. He also devotes part of his time to mathematical modeling of repositional processes within ancient and modern sedimentary basins.

After graduating, Ledvina worked in the coal section of the ISGS for three years and then was assistant superintendent of Freeman-United Coal Mining Co.'s Crown II mine near Springfield. He obtained certification as mine manager, mine examiner and electrical hoisting engineer.

In September 1978, while an examiner with Old Ben/Ziegler Coal Co., Ledvina was caught in a roof fall accident (cave in) and spent the next two years in the hospital "nearly dead," he writes. "I emerged from this in a wheelchair, but, thank God, alive and with all the important stuff intact and working."

He tackled mathematics and received a master's in geology from Northeastern in 1988. Last year he received his Ph.D. in mineral resource engineering from Northwestern University. "Over the years, I have accumulated a fair list of publications and have acquired skills that may surprise those who knew me in the early seventies," Ledvina writes.

He and his wife of almost ten years, Nancy, live in Chicago and are planning to start a family.

"I sincerely thank the U. of I. Department of Geology for all the help and encouragement provided," Ledvina adds. "Special thanks go to Dennis Wood, Hilt Johnson and Alberto Nieto for enthusiastically encouraging me to go to graduate school. I thank a fellow alumnus, Bill Dawson, for repaying favors one thousand times over (I got him his first three jobs). I also have fond memories of Albert Carozzi. I especially remember some fellow students, including Tom Chamberlain, John Nelson, Bob Ringler, Mark Reinbold and Bill Rice—these guys are great!

"My fondest memories are from field camp and Dave Anderson and Jim Kirkpatrick (1972) and great cold nights in Arrow Canyon. Great times were had in Murphy's, Treno's and as a member of the KESMLTST Club. The truest and most sincere thanks go to George Klein, Ralph Langenheim and Jack Simon—my greatest inspirations! Hello to all."

William I. Ausich (B.S. 74) is a professor at The Ohio State University. He is currently enjoying a Fulbright Research Fellowship for the spring and summer at Trinity College in Dublin, Ireland. His wife, Regina, and three children are with him. His research includes the study of Lower Carboniferous crinoid evolution.

Margaret (Watson) Rutledge (B.S. 74) is manager of finance for Mesa Consolidated Water District in Costa Mesa, California. She reports to the general manager and runs the customer service, accounting and DP departments.

Her second child, Marion Virginia, was born December 12, 1990. Rutledge also has a five-year-old son, Andrew. Her husband, Jim, received his Ph.D. in physics from the U. of I. in 1978.

Brian J. Cardott (B.S. 77) has been an organic petrologist and geologist at the Oklahoma Geological Survey for ten years. He specializes in petrologic characterization of organic-rich rocks in Oklahoma and is specifically involved in ongoing studies of coals, hydrocarbon source rocks and asphaltite deposits. He is vice president and will be co-host of the 1993 annual meeting of The Society for Organic Petrology.

He and wife Kathy have been married for fourteen years and have two children, Lauren and Evan. The family recently moved to a new house in Norman, Oklahoma.

Beryl A. (Horn) Hosack (B.S. 77) is senior computer scientist for Computer Sciences Corporation (CSC). She is working in a joint venture between CSC and Alenia SPA in Italy to support the European Space Operations Center in Darmstadt, Germany. She is developing an expertise in mission planning (for scientists and instrument developers) for both ESA participation with the space station and with other free flyers. Hosack has been in Italy the past two years and has recently signed on for another year.

She and husband Glen have two boys, Aaron and Jeremiah.

"We are enjoying our overseas experience immensely," she writes. "I travel a lot on business to Rome, Frankfort and other cities. We have traveled extensively while here—Tunis, Yugoslavia and northern Europe. We have all learned Italian and have acquired two large dogs. Lots of interesting geology here in the south of Italy, too!"

After working for several different companies and surviving a period of unemployment during the oil crunch in 1986, **Patricia "Pat" Maas** (B.S. 77) is back at Western Geophysical Co. in Houston, Texas, as a geophysicist. In May, she and husband, Larry Pedigo, became parents of twin girls, Allison Jean and Amy Leigh. Maas has taken some time off to take care of the girls.

"My good friend, **Betty Evans** (B.S. 78), completed her MIS degree at the University of Arizona in Tucson," she writes, "and has moved to Kennewick, Washington, where she is employed by Batelle Research Laboratories as a computer programmer. She was married March 17, 1991, to John Williams, who is also a programmer at Batelle."

Nancy Beresky (B.S. 77) of Irvine, California, has been an associate hydrogeologist with McLaren/Hart since April 1990. Her job includes project management of soil and groundwater investigations for sites contaminated by petroleum (bulk storage facilities, gas stations), solvents and/or metals (manufacturing facilities). She is also managing the removal of an eleven-acre hydrocarbon plume floating on top of groundwater at a Marine Terminal in Los Angeles.

From 1988-90, she was a hydrologist with the Arizona Department of Water Resources and worked in its computer modeling section for about one year. Prior to that, she consulted in the Illinois Basin oil industry for six-plus years.

James W. Castle (Ph.D. 78) of Cabot Oil and Gas Company received the A.I. Levorsen Memorial Award for best oral paper at the 1991 Eastern Section annual meeting of the American Association of Petroleum Geologists in Pittsburgh, Pennsylvania.

EIGHTIES

Richard J. Kent (B.S. 80) works in sales for Heritage Environmental Services of Laguna Hills, California, involving hazardous waste disposal and remediation.

Ron Richman (B.S. 80) is District 5 materials engineer for the California Department of Transportation. He is responsible for the design, construction and maintenance input in areas of geology, geotechnical engineering, materials and pavements, and hazardous waste. A staff of fourteen covers a four-county area, including Monterey, Santa Barbara and the Big Sur coast. Richman lives in Atascadero, California, and has a two-

year-old son, Matthew Arron.

Don Neeley (B.S. 80) has been working with International Teams. For the last two years, he and Rusty have been living twenty kilometers south of Vienna, Austria, working with refugees.

"We work out of 'The Oasis' and do our best to meet their needs--physical,spiritual, emotional--or refer them to others who can help in areas we can't," he writes. "We give out clothing, have three coffee bars a week (an open time when all can come in, warm up, talk, read or play some chess and drink some free coffee) and give out Christian literature in about fifty languages."

Neeley planned to return to the United States in January and to begin looking for a new job in the oil and gas industry. Before living in Austria, he had worked for seven years at Amoco in New Orleans, Louisiana.

Polly Lee (Knowlton) Cockett (M.S. 80) and husband, Robin, have two boys and are expecting their third child in April. The family just spent one and a half years in Sydney, Australia, and managed to explore most of the coastline from the tropics north of Townsville, Queensland, and the Great Barrier Reef, all the way along New South Wales, around Victoria and shipwreck coast to Hallett Cove strations, Blue Mountains, South Highlands and, their favorite, volcanic remains in Warrumbungles, NSW. "The boys are both great bush walkers and rock collectors," she writes. "Really missing Australia while now sitting under a snow drift in the High Prairies, looking at Canadian Rockies, and it's not even Halloween yet. ..."

Lee M. Hirsch (B.S. 81) recently began a position with Exxon Production Research in Houston, Texas, involving research on fluid flow through porous media. His previous position was as a postdoctoral fellow at Los Alamos National Lab, where his research centered around understanding the physical properties of mantle minerals.

Jeffrey Fritz (B.S. 78, M.S. 81) has been with Shell for eleven years, the last seven years in Pecten working on exploration projects in Africa. "I've enjoyed the opportunities of visiting such places in Africa as Tanzania, Somalia, Kenya and Guinea Bissau," he writes.

His wife, **Mary L. Olsen** (B.S. 78) is currently an assistant professor of medicine in the Division of Rheumatology and Clinical Immunogenetics at the University of Texas Health Science Center in Houston. The couple have two sons, Tyler and Carter.

Joseph K. Schrodt (M.S. 81, Ph.D. 83) is a research physicist at the Naval Coastal Systems Center in Panama City, Florida, working in the area of mine countermeasures. He previously was with Standard Oil of Ohio (now BP America) as a research geophysicist.

He and wife Christi have three children, Julie, Lisa and Kevin, who are all in school. "Some of you may remember Julie, who was one and a half years old when we left Urbana," he writes. "We enjoy living along the Gulf Coast and do not miss the frigid Illinois winters. There are 'snowbirds' arriving in town now for the winter. Illinois is well represented."

Paul V. Heinrich (M.S. 82) earned his Ph.D. in geology/geotechnical engineering last fall from Louisiana State University in Baton Rouge. He is an environmental and archaeological geologist for Coastal Environments, Inc. Heinrich also has had a review of the geoarchaeology of the Louisiana Coastal Zone accepted for publication.

He is now studying the geoarchaeology of segments of the Texas coastal plain and continental shelf. "It is strange being able, in a study, to mix sequence stratigraphy and archaeology," he writes.

Jeff Turner (B.S. 83) is an environmental geologist and regional groundwater coordinator for the Illinois Environmental Protection Agency in Champaign. He inspects industrial facilities with groundwater monitoring and underground waste injection programs, in addition to inspecting other solid waste and hazardous waste facilities.

"I am finishing my fifth year back in Champaign-Urbana," he writes, "and my fourth year with Illinois EPA. It's great to live and work here and enjoy the benefits the U. of I. brings to the area without having to take any exams!"

Valla (Jones) Earl (B.S. 84) of Cody, Wyoming, had a boy, Daniel Joseph, on May 30. "This is the last," she writes. "Two years of pregnancy is enough! I am very please with the results, though!"

Andrew Reeve (B.S. 86) is currently working on his Ph.D. in geology at Syracuse University in New York. He plans to do research on wetland hydrogeology and geochemistry, most likely in the Hudson Bay Lowlands or the Yucatan Peninsula.

He started his master's work at Northern Illinois University after graduation. His thesis work involved the hydrogeology and aqueous geochemistry of the western north coast of the Yucatan Peninsula. But he interrupted that work for a two-year stint as a hydrogeologist for ATEC Environmental Consultants.

In August 1990, he married Becky Brackensick and started working for Argonne National Laboratories as an environmental scientist in the Environment, Safety and Health Division. He finished his master's thesis in October 1990 and received his M.S. degree in December of that year.

Mark P. Fischer (B.S. 87) is working on his Ph.D. in geology at Penn State. With the help of a research fellowship, he is working with Terry Engelder (Steve Marshak's adviser at Columbia) on some fracture mechanics problems.

In November, he wrote that he and his wife, Tamara, were expecting their first baby December 28.

NINETIES

James A. Cremeens (B.S. 88, M.S. 90) is a project engineer in the Mining Group of Golder Associates, engineering consultants in Lakewood, Colorado. He is primarily involved in site characterization and slope stability analysis for mining excavations and occasionally performs the same function for waste disposal sites. "This is exactly the type of work I had hoped to do," he writes. "I couldn't be happier."

Faculty

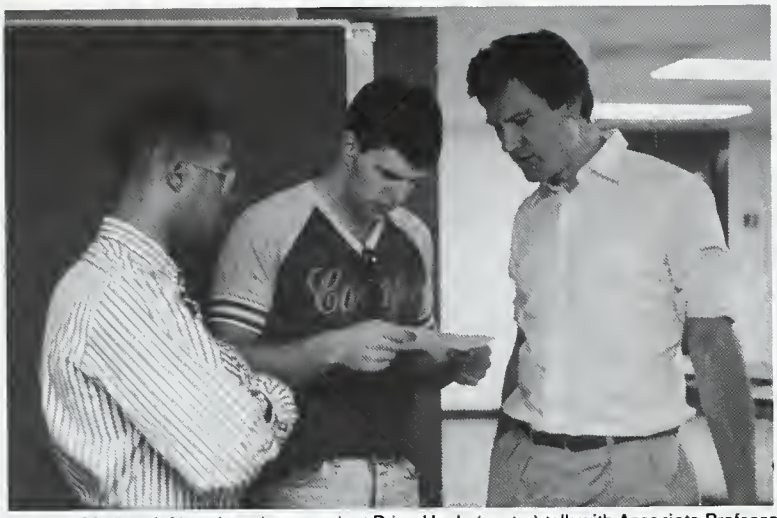
Stephen P. Altaner, associate professor
David E. Anderson, professor
Thomas F. Anderson, professor
Jay D. Bass, associate professor
Craig M. Bethke, associate professor
Daniel B. Blake, professor
Chu-Yung Chen, assistant professor
Wang-Ping Chen, associate professor
Timothy L. Clarke, assistant professor
Richard L. Hay, Ralph E. Grim professor
Albert T. Hsui, associate professor
W. Hilton Johnson, professor
R. James Kirkpatrick, professor/dept. head
George deVries Klein, professor
Joan Kluessendorf, research associate
Ralph L. Langenheim Jr., professor
C. John Mann, professor
Stephen Marshak, associate professor
Peter A. Michalove, assistant to dept. head
Alberto S. Nieto, professor
Charles Norris, research associate
Lois M. Pausch, librarian
Philip A. Sandberg, professor

Adjunct/Emeritus Faculty

Albert V. Carozzi, emeritus
Keros Cartwright, adjunct/ISGS
Carleton A. Chapman, emeritus
J. James Eidel, adjunct/ISGS
Leon R. Follmer, adjunct/ISGS
Donald L. Graf, emeritus
Arthur F. Hagner, emeritus
Donald M. Henderson, emeritus
Morris W. Leighton, adjunct/ISGS
T.L. Phillips, professor (with plant biology)
Robert Reynolds, adjunct/professor
Harold W. Scott, emeritus

Non-Academic Staff

Jean E. Daly, staff clerk
David Ehrensperger, library clerk II
Murle Edwards, clerk
Barbara Elmore, transcribing secretary
Jessie Knox, cartographer
Eddie Lane, electronics engineering assistant
Patricia Lane, administrative secretary
Gordon L. Madise, system administrator
Marsha Powell, account technician I
Diana L. Walter, library technical assistant II



Systems analyst Gordon Madise (left) and graduate student Brian Healy (center) talk with Associate Professor Craig Bethke.

Bethke's hydrogeology students work in the newly remodelled Computer Visualization Lab.

Graduate student and Harold Scott Scholarship recipient Ming Kuo Lee.

Please take a few moments to let us and your classmates know what you've been doing: promotions, publications, election to office, marriages, parenthood, moving, awards. We'd all like to hear from you!

Name _____ Response date _____

Home Address _____ Office Address _____
(indicate if changed)

_____ _____

_____ _____

_____ _____

Home Phone _____ Office Phone _____

Degrees from Illinois (with year) _____ Degrees from other universities _____

_____ _____

_____ _____

Present employer and brief job description _____

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Other news you would like to share _____

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Your comments on the alumni newsletter _____

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Place
Stamp
Here

Editor, *GeoSciences*
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University of Illinois
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Urbana, IL 61801-2999

Department of Geology
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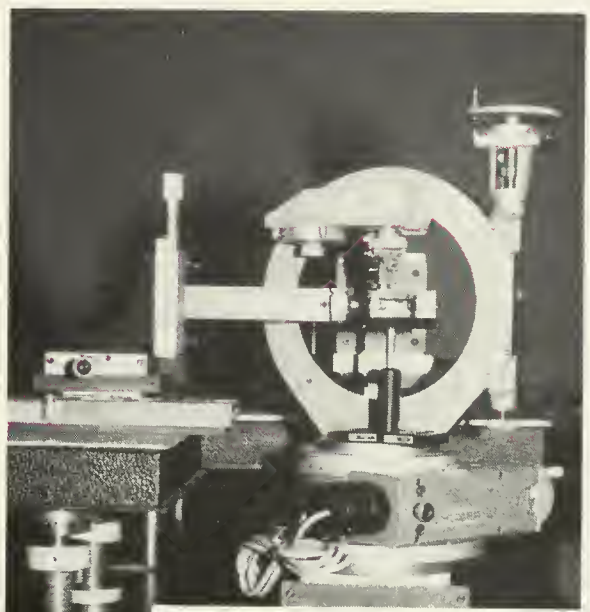
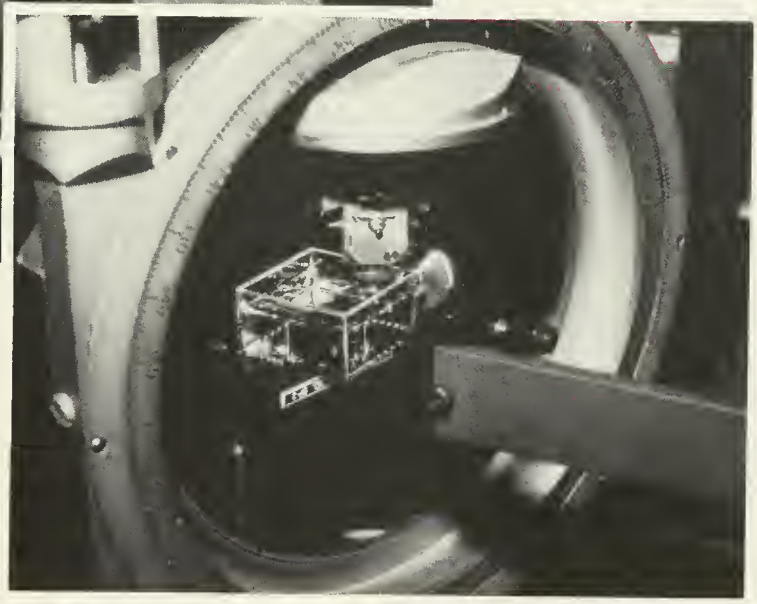
University of Illinois at Urbana-Champaign

GeoSciences

Department of Geology
Alumni Newsletter
Fall 1992





UNIVERSITY OF ILLINOIS

GeoSciences

Alumni Newsletter FALL 1992

Cover Photograph: Part of the laser spectroscopy system used in Professor Jay Bass's research with Brillouin scattering techniques.

GeoSciences is the Alumni newsletter for the Department of Geology, University of Illinois at Urbana-Champaign. It is published in September and February of each year.

Staff: Department Head: R. James Kirkpatrick; Asst. to the Head: Peter A. Michalove; Editor: Vanessa Faurie; Designer: Jessie Knox; Admin. Secretary: Patricia Lane.

Message from the Department Head

R. James Kirkpatrick

Dear Friends,

Despite the generally difficult situation for education nationally, I am glad to be able to report continued improvement in the educational and research environment of the Department and a special honor for an alumnus.

Bob Dietz (A.B. 37, M.S. 39, Ph.D. 41) is receiving the University of Illinois LAS Alumni Achievement Award this fall for his contributions toward the development of plate tectonics and understanding the geological role of meteor impacts. Bob will receive the award at Homecoming, and I hope as many of you as possible can make it back here to help us honor him for all he has done for the profession.

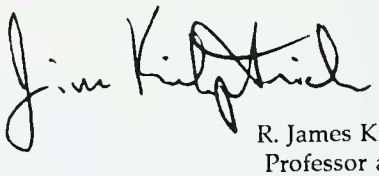
On the educational front, enrollment remains strong in our general education courses and has essentially reached the limit of our resources. A great many young people, whether or not they are science majors, are very interested in the earth and concerned about the environment and potential future changes. I am very pleased that our courses provide the kind of background they need to make the informed and rational decisions that will be required of citizens in the future.

Computerization of instruction is taking a big leap forward this fall with the opening of a Macintosh computer laboratory for the introductory courses and a laboratory of eight newly acquired IRIS Indigo work stations for upper-level undergraduate and graduate courses. The IRIS work stations are an unexpected surprise and were obtained by a group of faculty headed by Craig Bethke through a competitive University program. This lab will be one of the most powerful computer classrooms on campus. The hydrogeology, geophysics, geochemistry and mineralogy courses should benefit greatly from the new equipment.

I also am pleased to announce that we have received an NSF grant for additional remodeling of the Natural History Building, and planning is already underway. As was the case with the previous stages of the remodeling, most of the efforts will go toward renovating laboratory facilities. We need to find additional matching funds for this project, and you will be hearing more about it during the GeoThrust campaign.

The timing of the remodeling program is especially appropriate because the Natural History Building is one hundred years old this year. We have planned a birthday party for the building October 11. If you can make it, we would be pleased for you to attend. Contact the Department for times.

Sincerely,



R. James Kirkpatrick
Professor and Head

GeoNews

The "Dinosaurs Alive!" exhibit is a group of twelve life-size robotic dinosaurs, including *Stegosaurus*, *Tyrannosaurus rex* and *Apatosaurus*, that move and roar as if the extinct creatures were back roaming the earth. Paleontological research contributed to determining how the dinosaurs would have moved and what they may have sounded like.

Natural History Building celebrates 100th birthday

The grand old Natural History Building will be the guest of honor at a party to celebrate its 100th year, and you're invited.

The event is being planned in conjunction with the Natural History Museum-sponsored Dinamation exhibit, "Dinosaurs Alive!," at Lincoln Square Mall in Urbana that runs from October 10 through January 1, 1993.

The Natural History Building will be open from 2-5 p.m., Sunday, October 11. An enormous dinosaur will greet visitors as they enter the building to partake of birthday cake--one in the shape of the building and one adorned with dinosaur decorations. Three display cases will feature memorabilia such as the original program from the dedication ceremony and photographs of the building's construction and early years.

Designed by Nathan Clifford Ricker in the American High Victorian Gothic style, the original building was only 50 feet by 90 feet. Additions have increased the dimensions to 90 feet by 180 feet.

A special Mass Transit District shuttle bus will take guests back and forth between the Natural History Building and the Dinamation exhibit. The bus won't be hard to find--it will have a large papier mache dinosaur head attached on the front.

The "Dinosaurs Alive!" exhibit is a group of twelve life-size robotic dinosaurs, including *Stegosaurus*, *Tyrannosaurus rex* and *Apatosaurus*, that move and roar as if the extinct creatures were back roaming the earth. Paleontological research contributed to determining how the dinosaurs would have moved and what they may have sounded like.

Additional information and displays will be featured throughout the exhibit area, including interactive dinosaurs operated by joysticks and other hands-on items.

It's a fun way for visitors of all ages to learn about dinosaurs, and what the Museum hopes will be a spark for children to become interested in

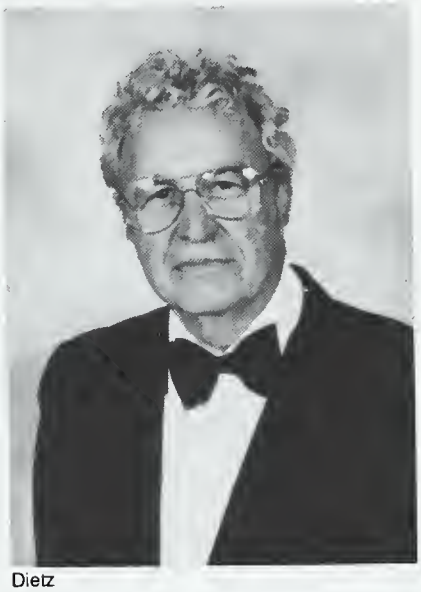
"Natural History Hall" is dedicated in 1892.

The Natural History Building nears completion.

science and scientific careers. Admission to the exhibit is $5 for adults; $4.50 for seniors and Museum Friends; and $2.50 for children 2-12. Special student group rates are available, too.

Pioneer Dietz to receive LAS Achievement Award

One of the two principal founders of the plate tectonic theory will accept a College of Liberal Arts and Sciences Alumni Achievement Award during Homecoming 1992.



Dietz

Robert S. Dietz (A.B. 37, M.S. 39, Ph.D. 41), professor emeritus of geology at Arizona State University, will return to his alma mater in October to participate in a weekend full of activities on the college and department level. (See accompanying story for details.)

Dietz built his reputation by advancing bold, and often controversial, concepts that received abundant supporting evidence in subsequent years to make them widely accepted and even considered commonplace by today's scientists.

"In many ways, his pioneering insights and contributions set the agenda for much of modern geological scientific research," said Professor and Department Head **R. James Kirkpatrick** (Ph.D. 72).

"Dr. Dietz and the designer of the Bathyscaph, Dr. Jacques Picard, were the first humans to explore the floors of ocean trenches by making deep manned submersible dives," Professor George deV. Klein wrote in a nominating letter to LAS. "His conclusions from this work was that the mid-ocean ridges were areas where sea-floor spreading processes occurred whereby new crust was formed, and as a consequence, continents were pushed apart. ... This concept was controversial, but through late work by Dietz and others, it has become the basic paradigm for understanding the evolution of the earth's crust, the concept of plate tectonics."

Dietz also advanced the concept of terrestrial impact structures to explain the origin of craters on the moon and other impact sites on the earth.

In recognition of his many contributions to marine geology, oceanography, meteoritics, plate tectonics and organic evolution, Dietz has been awarded numerous honors over the years, including the prestigious Walter H. Bucher Medal in 1971 from the American Geophysical Union and the Penrose Medal in 1988 from the Geological Society of America.

Join us for Homecoming

Mark your calendar for U. of I. Homecoming October 23-25. The Department has some special events planned just for you.

Friday afternoon begins with a 3:15 p.m. reception in the Department for **Robert S. Dietz** (A.B. 37, M.S. 39, Ph.D. 41), who is being honored that weekend by the College of Liberal Arts and Sciences as one of its 1992 Alumni Achievement Award recipients. A colloquium by Dietz, known as one of the two principal founders of the plate tectonic theory, will be presented at 4 p.m.

Saturday, October 24, features the 1 p.m. football match-up between the Illini and Northwestern, with a post-game party for Dietz at the home of Professor and Department Head R. James Kirkpatrick.

R.S.V.P. to Pat Lane at 217/333-3542 if you can attend. A few hotel rooms have been reserved to be issued on a first-come, first-served basis.

Student makes senior year memorable

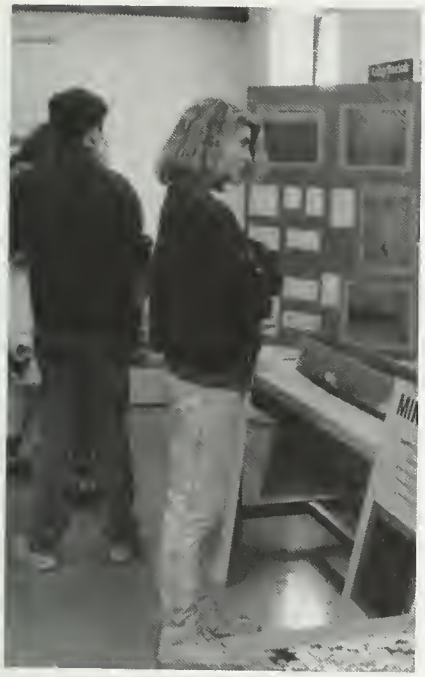
Duane Kreuger (B.S. 92) saw a problem during his senior year and went about solving it.

Despite the relatively few

Kreuger

undergraduates in the Department compared to the graduate student population, Kreuger wanted to make his last year at the U. of I. a memorable one, particularly for the Geology Club.

So in conjunction with the annual College of Engineering Open House during the last week of February, the Geology Club sponsored one of its most successful Geology Open Houses.



"We only had one month to put it together," Kreuger said. "I thought if we pulled it off as a big success, maybe younger groups would continue the trend."

Club members worked on new displays and, with the help of some Department funds, revamped old ones that had been damaged by last year's fire.

Some of the more popular exhibits included a collection of computer programs on seismology by Associate Professor Wang-Ping Chen and Don Colby in which visitors watched earthquakes on a screen. Grade school teachers asked for more information to use in their own classrooms.

Ralph E. Grim Professor Richard L. Hay, who had worked with the Leakeys at Olduvai Gorge in Tanzania, and Kreuger updated the Laetoli footprint display.

Museum of Natural History Curator **Joanne Kluessendorf**'s (B.S. 83, M.S. 86, Ph.D. 90) contribution was a display case of dinosaur bones that "was a big attention-getter," Kreuger said.

Professor Philip A. Sandberg and **Jennifer Wilson** (B.S. 92) had a science display about XY chromosomes in dinosaurs and their inheritance characteristics.

Mineral boxes for hands-on exploration were put together by **Jennifer Distlehorst** (B.S. 92), prompting many to inquire about the possibility of a "hands-on" room for the Museum.

Kreuger estimated that 500-1,000 people (mostly high school and grade school students) attended the Open House in the Natural History Building. "The more inquisitive ones are the younger ones," he said.

Visitors attend the Geology Open House.

Other club members who contributed to making the Open House a success included **Rich Dentzman** (B.S. 92), Tim Dona, **Kathy Vieregge** (B.S. 92), Ed Othon, Pat Manion, Debbie Vanderlinden, Kalene Caffarella and Todd Cole.

But an open house wasn't Kreuger's last extracurricular activity for the year.

When he found out that nothing was being planned on a department level to recognize the six graduating seniors because of a lack of interest in past years, the wheels were set in motion one more time.

Again with the Department's support, Kreuger and **Anahita Tikku** (B.S. 92) began planning a small reception at the Levis Faculty Center for May 16. Personal invitations were sent to faculty and staff members and their families, as well as the six seniors and their families.

From 4-6 p.m., people trickled in and sampled some food and punch while visiting with each other at small tables in a very informal atmosphere.

"It was a big hit," Kreuger said. "The reception was a lot of fun."

He also credited Department Head Jim Kirkpatrick for his role in making the event a success.

"He saw what we were doing, and it seemed to strike a spark in him," Kreuger said. "He was in Washington and came back to be with us for the day and then went back. The parents got to meet him. It really hit home with the families."

In a small ceremony, Kirkpatrick was introduced and then the faculty members in attendance. The students names were announced as they received diploma covers.

Making the observation that the larger campus commencement ceremony is too impersonal, Kreuger said the department reception gave the seniors the chance to be recognized individually. "Just to have the faculty come around and shake

hands with my parents ...," he said as his voice trailed off.

"It made it seem more worth it," he added, "like there was a conclusion. We didn't feel lost in the shuffle."

DEGREES GRANTED

Bachelor of Science

August 1991
Joseph Anthony Klemp
Roderick Joseph Padgett
Katherine Anne Panczak

May 1992
Curtis Charles Abert
Jennifer Ann Distlehorst
Duane Thomas Kreuger
James Richard Stasi
Anahita Ani Tikku
Jennifer A. Wilson

Master of Science

August 1991
Eric James Holdener – Numerical Taxonomy of Fenestrate Bryozoans: Evaluation of Methodology and Applicability to Analyses of Microevolution

Rosemary Ann Schmidt -- Residual Shear Strength of Unsaturated Kaolinite in a Thin Seam

October 1991
Jennifer Beth Kupperman -- Comparative Tectonics, Sedimentation and Geodynamics of the Arkoma Peripheral and the Idaho-Wyoming Retro-Arc Foreland Basins

May 1992
Kurt William Larson -- non-thesis

Kim A. Weborg-Benson -- Cladistic Analysis of the Ptilodictyina [Bryozoa]

Doctoral

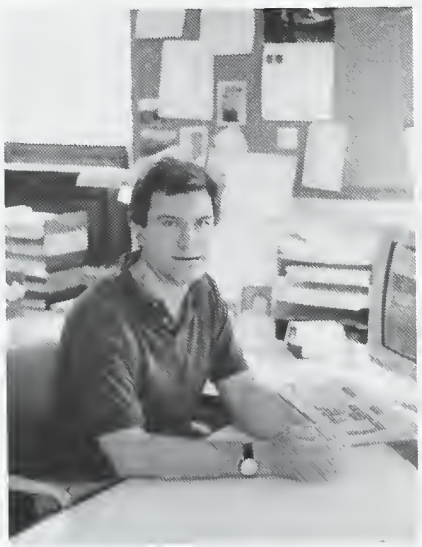
October 1991
Marlon Scott Wilkerson -- Three-Dimensional Kinematics and Geometries of Thrust-Related Folds

January 1992
Eric Joseph Daniels -- Nature and Origin of Minerals in Anthracite From Eastern Pennsylvania

Bethke receives GSA honor for publications

Associate Professor **Craig M. Bethke** (Ph.D. 85) will accept the 1992 O.E. Meinzer Award from the Geological Society of America for two publications he authored or co-authored.

Bethke



The award is given annually to the author or authors of a published paper or body of papers of distinction advancing the science of hydrogeology or some related field such as groundwater hydraulics or geochemistry. The award will be presented to Bethke at the Society's annual meeting in Cincinnati, Ohio, in October.

The two publications he is being honored for are "Modeling subsurface flow in sedimentary basins," *Geologische Rundschau*, 1989 (v. 78, no. 1, p. 129-154) and "Supercomputer analysis of sedimentary basins," *Science*, 1988 (v. 239, p. 261-267), which was co-authored with W.J. Harrison, C. Upson and Associate Professor **Stephen P. Altaner**.

Bethke's acceptance speech will be published in an upcoming issue of the *GSA Bulletin*.

HONORS & AWARDS

Graduate student **David Ulicny** received a SEPM SED (Student Excellence and Development) Award for 1992 from the Society for Sedimentary Geology in recognition of outstanding young geoscientists. Ulicny is studying with Professor George deV. Klein.

The award includes a year's membership in SEPM, back issues of its journals and current one-year subscriptions to *Palaios* and the *Journal of Sedimentary Petrology*.

Profile

Jack Threet

'We never know enough before drilling to say there's a one-in-four chance of hitting oil," Threet says. "We developed a system for getting geologists to use parameters and quantitative terms. Shell handled its exploration economics better than any other company. It was pioneering the field, and it was important as (Shell) became more and more of a business."

One company suited Threet for a career

While working on his master's degree, **Jack Threet** (B.A. 51) got a summer job at Shell Oil Company in Tulsa, Oklahoma, thanks to Harold Scott, his principal adviser in the geology department, who knew a recruiter there. But the job ended up lasting thirty-four years.

Today Threet is retired after moving up in the ranks and around the world with Shell. But back in 1951, he says, he didn't know one company from another. He just knew he had a strong interest in development and application of technology by people, and Shell turned out to be an upbeat company that was strong in exploration.

Newly married to wife Katy, who was working at the U. of I. to help put him through school, Threet boarded a train and headed for Tulsa. Interestingly, his father's first job was also in Tulsa before World War I; he was a telegraph operator for an oil and gas pipeline.

Threet had traveled some with his family, but living on his own in Tulsa was a lonely existence. In mid-summer, Katy joined him and they rented a humble apartment above a two-car garage. Threet remembers having to borrow a fan to try to keep cool that summer.

Under an industrial deferment, Threet stayed in Tulsa for two years before being drafted into the Army in 1953. He worked in a products testing lab in Pasadena, Texas, checking the quality and consistency of petroleum-related products that the Army used such as lube oil, gas and kerosene.

But by 1955, Threet was back at Shell--the only oil company for which he ever worked. He was in the stratigraphic department doing detailed drill cuttings from wildcat wells. It was a new technology.

"I liked stratigraphy," he says, "even in school."

Jack and Katy Threet at his Shell retirement party in 1987.

Much of his work was in the Williston Basin, located in North Dakota, South Dakota, Montana and up into Canada. In 1950, oil was discovered in that basin, and exploration fever hit. Threet had entered the oil business at a time of great expansion.

"Then I went to Denver and began in jobs across the country," he says. "They weren't always steps up, but if not they were good steps sideways."

He soon moved into the mid-continent area of Oklahoma and Texas as part of the exploration team. His family was expanding, too, with the births of two daughters. Linda was born in 1954 in Texas, and Judy was born in 1955 in Oklahoma. By 1959, Threet took on his first team manager position in Amarillo.

"Then I went to Denver and began in jobs across the country," he says. "They weren't always steps up, but if not they were good steps sideways."

For a brief time he took over as division manager in the Appalachian Basin in Pittsburgh, Pennsylvania, but his first true division management position was in Lafayette, Louisiana. Then in 1965, it was Denver where he headed the newly formed Rocky Mountain Division that centralized the Billings and Casper divisions.

Above: The Threets with then-Shell President John Bookout and his wife. Below: The Threet's oldest daughter, Linda Mott, and her family. Top right: Threet can now spend more time with grandchildren Helen and Debbie. Bottom right: Jack and Katy Threet enjoy playing golf together.

Next on Threet's move up the Shell ladder was his first corporate assignment in New York as manager of exploration economics, which meant analyzing the economic merit of exploration techniques. The problem was that he hadn't had any real economic education prior to his appointment.

"It was baffling," he says. "It was puzzling. What made it interesting was the challenge that it was."

He readily admits that he had a lot of help and borrowed heavily from those already doing such analyses. The goal was to quantify the element of risk in exploration—that is, the chances of hitting a dry hole.

"We never know enough before drilling to say there's a one-in-four chance of hitting oil," Threet says. "We developed a system for getting geologists to use parameters and

quantitative terms. Shell handled its exploration economics better than any other company. It was pioneering the field, and it was important as (Shell) became more and more of a business."

After that experience, the family moved back to Denver for a short time and then on to Los Angeles where Threet was the Pacific area exploration manager.

"A lot of the jobs were more of the same," he says of his moving around. "Rocks are rocks. Oil is oil. And people are people."

In 1969, however, the Threet family left the liberalism of California for the conservatism of Australia. His daughters certainly had interesting educations, Threet says, as they adjusted from attending school in free-wheeling California to wearing school uniforms in Australia.

Threet was general manager of exploration and production in Melbourne, which included on-shore and off-shore sites. He was there for two years before moving to Canada as vice president and head of exploration and production for Shell-Canada. The two major frontiers for exploration there were the mouth of the Mackenzie River and off the east coast of Nova Scotia.

"I saw a lot of the world," he says of that opportunity, "its challenges, its problems and its people. It was the most interesting job I had had."

When the next transfer came through for New Orleans, Threet's daughters remained in Canada for their college educations. In 1975, Threet went to Shell-Houston, which used to be domestic only, to head a new international exploration effort.

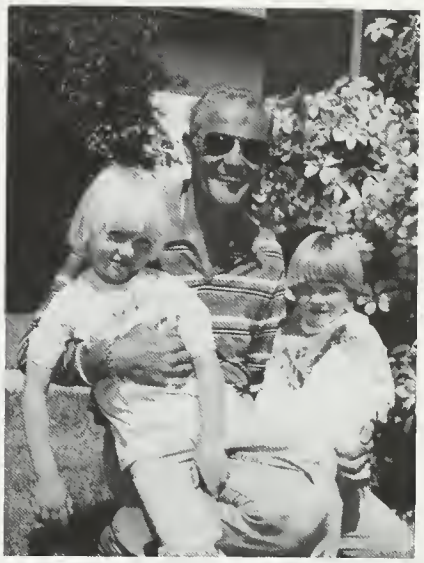
"I saw a lot of the world," he says of that opportunity, "its challenges, its problems and its people. It was the most interesting job I had had."

While still in Houston, Threet was asked to become head of exploration for Shell across the board, domestic and foreign. For the last six years, up until his retirement in 1987, Threet's job mostly involved dealing with environmental opposition to off-shore exploration. His job was to get the message out via radio, TV talk shows, Congressional hearings, etc.

"What we were trying to do was get access to explore," he says, "not produce. We didn't know if oil was even there. For the nation's security and economy, it is important to have a supply for long-term needs that is safely produced."

Threet says it is safer to produce oil with off-shore-to-on-shore pipelines and wells than it is to have it shipped by tankers from overseas.

"Nothing in your life is ever going to be risk-free," he adds. "Very little has been found in the preliminary explorations (off California and Alaska). But we don't have valves to just start turning on the Atlantic Coast oil supply, for example, when we need it."



After thirty-four years with Shell and almost as many moves, Threet retired--if it can be called retiring. Threet is now very active on the geology department's GeoThrust Committee, as well as being active in the American Association of Petroleum Geologists, Rotary and his church and sitting on boards of a small bank and a geophysical firm. He also helped start an oil and gas exploration company in Houston in 1989, but it is now operating at about 25 percent of what it once was.

He and Katy split their time between homes in Houston and Pagosa Springs, Colorado. They enjoy having the time to play golf and see their grandchildren more often. But being a part of the GeoThrust Committee is an important commitment for Threet.

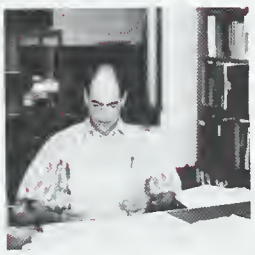
"Those of us who've been to the university have something to offer back," he says. "We can take the experiences we've had and look at what's going on at the U. of I. It's a chance to make something, even slightly, better.

"You just never seem to make time for that kind of thing when you're working."

Profile

Jay Bass

"So you have a method of measuring something in the laboratory that is comparable to something you can observe in nature--which is how fast earthquake waves, or large-scale sound waves travel through the earth."



Looking to the light for some answers about the earth

"Earth" is a word that gets tossed about pretty casually. Somebody can be *down to earth* or try to *move heaven and earth* or figure out *where on earth* he put his car keys. Sure it's the planet we live on. But we don't even know what it's made of, although we think we know what it should be. Quite literally, we've only just scratched the surface. We can't get down inside it far enough to find out what else is there.

That's an interesting challenge for Associate Professor of mineralogy **Jay Bass**. His research involves laser spectroscopy, which means he shines a laser through crystals and examines the light that is consequently scattered by them.

"The set of light components that comes off is different due to the sound waves that propagate in the crystal," Professor Bass said. "Sound waves are basically vibrations of the atoms in the crystal. When you look at the light which is scattered through the crystal, you can tell how fast sound waves, or pressure waves, travel through the crystal. These are the same sorts of sound waves that are generated by earthquakes, for example.

"So you have a method of measuring something in the laboratory that is comparable to something you can observe in nature--which is how fast earthquake waves, or large-scale sound waves, travel through the earth."

Sound waves can be measured through many substances, but Professor Bass uses materials that are the kinds of things found in the earth in order to study deep earth structure and the chemical composition of the earth. He is also interested in the effect water has on minerals and subsequently their sound velocities. Then Professor Bass wants to compare the results of his experiments on minerals with the results that seismologists gather on how fast earthquake waves travel through the earth.

"They (seismologists) can tell you at a depth of 2,000 kilometers in the earth how fast sound waves travel," he said. "So this is a measure of the properties of the earth at high pressure and at high temperature."

Such approaches are necessary

Professor Bass in his lab

since the deepest part of the earth for which there are actual rock samples is only about 200 kilometers down. With the earth's radius being more than 6,300 kilometers, that's not much.

"It would probably be a lot easier to put a man on Mars than to pull a sample from, say, 500 kilometers down."

If the sound velocities at high pressure and high temperature were known for every possible material that could be down in the earth, Professor Bass said, "then you could try to find some collection of different materials or make up a rock that gave you the right velocities for all depths in the earth. And then you'd know the chemical composition."

One of the problems with this technique, however, is that there is no unique solution. Other evidence has to come into play.

"The thing that I like about my approach is that we have a way of comparing something you can measure in the lab with actual properties and material that are at high temperature and high pressure," Professor Bass said. "It's the most directly comparable way of getting the answer, I think."

Measuring sound velocities with laser spectroscopy is a relatively new technique (known as Brillouin scattering), but other methods were used years ago. The data for this field was apparent as far back at the 1920s and '30s, according to Professor Bass, but the methods required large crystals.

"Basically, they ran out of materials to do these measurements on," he said. "There are only so many minerals that occur as huge specimens. So for a long time, this field was more or less at a standstill."

The laser development and new spectroscopic techniques made it possible to use much smaller samples: "things that are the size of a human hair in thickness, for example," Professor Bass said.

During the 1991-92 academic year, Professor Bass went to the Max Planck Institute in Mainz, Germany, as a Humboldt Fellow to learn some new high pressure techniques, enabling him to make synthetic samples of what he said may be present hundred or even thousands of kilometers below the earth's surface.

"It would probably be a lot easier to put a man on Mars than to pull a sample from, say, 500 kilometers down."

Making the measurements is an interesting part of his job. But Professor Bass also enjoys teaching. The two harmonize in his hands-on approach in the lab.

"I'm a person who spends a lot of time in the laboratory and makes measurements and trains students on the instruments myself," he said. "There's not a lot that goes on down there, at least in the experiments, that I don't know."

Professor Bass teaches the undergraduate mineralogy course, some graduate specialty courses or current topic seminars, and "Geology in the National Parks," a general course for non-majors that he enjoys because it appeals to a lot of people."

One of his interests that has a select following, at least in Urbana-Champaign anyway, is the sport of squash. Professor Bass took up the sport while he was a student at SUNY-Stony Brook when he couldn't find any handball partners. His adviser from MIT was a squash player.

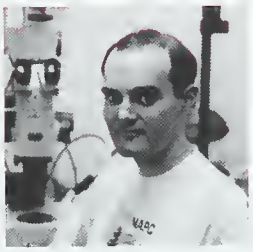
"I love squash," Professor Bass said and laughed. "When I came here, there were some people who play. Jim Kirkpatrick is a formidable opponent."

Anymore, though, with his research and teaching and the important time he spends with his three children (ages 6, 9 and 12), the problem for Professor Bass these days isn't finding a squash player, it's finding the time to play at all.

Profile

Steve Hageman

"I think it's more important, or almost as important, to have a good adviser. If you go somewhere, even the best school, and you don't get along with your adviser--forget it."



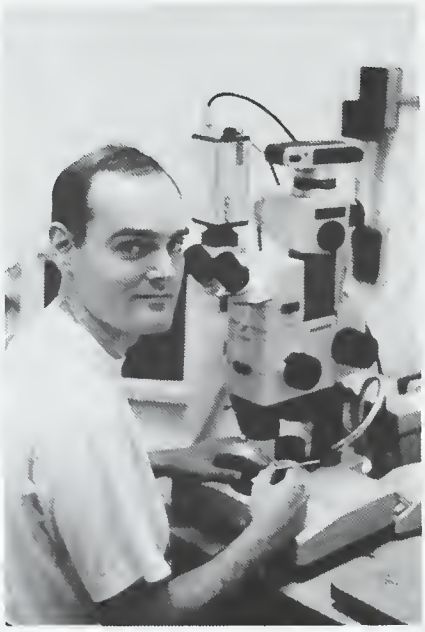
Ph.D. in hand, Hageman looks for next opportunity

"One of the more difficult things about being in the latter stages of grad school is that you're just operating entirely on self-motivation," **Steve Hageman** observed after recently completing the dissertation for his Ph.D. in paleontology. "I guess you get a little burned out. I've been in grad school seven years and the last four at the Ph.D. level.

"But that's not really negative," he reasoned. "You can afford to take a break. As long as you budget your time well, you can do whatever you want. So that's what I like about it. The hardest part is enjoying the time you have to enjoy and not worrying that you should be working."

All the years and effort paid off, however, in the form of a finished dissertation--a series of five manuscripts, three of which have already been published. Despite the accomplishment, any grand, emotional fanfare for such a finale was not to be.

Hageman



"Finishing a dissertation is such a diffuse thing; there are so many stages," Hageman said. "It's very anticlimactic. You give an oral defense for the department. Then, several weeks later, you give a closed defense for the committee. Then you make changes on that, and you walk by yourself and turn it in at the Grad College, which I just did last week. You give it to them, and there are a few things they want you to change. So then I walk back a second time with five pages that had been retyped and give it to them in a folder. You walk away thinking, well, OK. I walked over to The Daily Grind and got a tea."

The celebratory tea was a subdued ending to years of work. His thesis, *Morphometric Approaches to Systematics and Microevolution: Applications from Paleozoic Bryozoa,* is explained as taking a descriptive approach to paleontology and integrating it with a more theoretical mode. Hageman tested some new methods of measurement and shape analysis as well as biological theory.

"If you took two clones of the same organism and put them in different environments," Hageman said, "one would grow to look morphologically different than the other, but they have the exact same genetic material. So I wanted to test those limits in different environments."

"One of the things I did was look at a data set that another person had developed of fenestrate bryozoans," Hageman said. "And I looked at it with some numerical tests to try to determine if I could recognize species objectively with just the numbers. Not only is it supporting their work, but it's supporting the recognition of species in fossil organisms.

"One of the criticisms paleontolo-

gists get is that you're just looking at morphologic shapes so you can't get at true species," he continued. "But there have been some recent stud ies people working with modern bryozoans where one person does the morphometric analysis and one person does the genetic analysis, and they're coming out 100 percent in agreement. Their work in the modern says that our work in the Paleozoic is probably recognizing biologic species."

He initially wanted to test the rates of speciation. But when he looked at other previous studies, very few had accounted for or examined environmental effects.

"If you took two clones of the same organism and put them in different environments," Hageman said, "one would grow to look morphologically different than the other, but they have the exact same genetic material. So I wanted to test those limits in different environments."

Hageman compared populations from a stratigraphic layer about ten centimeters thick in Kansas at eight locations from the Kansas-Oklahoma border almost to Nebraska.

"It wasn't obvious when you looked at the specimens, but when you looked at the numbers and plotted up into multivariant space, you could see a trend from south to north that the skeletons thicken as you go north. It's very subtle. They're not genetically identical, but I don't think they're sub-groups or sub-species. I think what we're actually seeing is a change in water depth going out into the deeper part of the basin. What's important about that is that the rock looks the same along this transect. All you're seeing is a response to environmental change that the organisms record and the rocks don't."

For paleontology, this could be big news. Critics have been saying that studying the skeletons that organisms have left behind isn't enough to answer fundamental biological questions. Hageman thinks he's showing that there is enough to go on, but he hesitates at shouting it from any rooftops.

"I'm excited to pursue this line of research," he said. "But it's a little difficult as a student to come out and try to sound big about something because it happens all the time and then fades. I intend to publish a paper and let people see it, but not go out and push it. Let the work speak for itself. Then I'll do another paper and let it speak for itself."

Hageman cites his adviser, Dan Blake, as the main reason why he decided to stay on at the U. of I. for his Ph.D.

"We worked together really well, and I really respect him," Hageman said of Blake. "I think it's more important, or almost as important, to have a good adviser. If you go somewhere, even the best school, and you don't get along with your adviser--forget it."

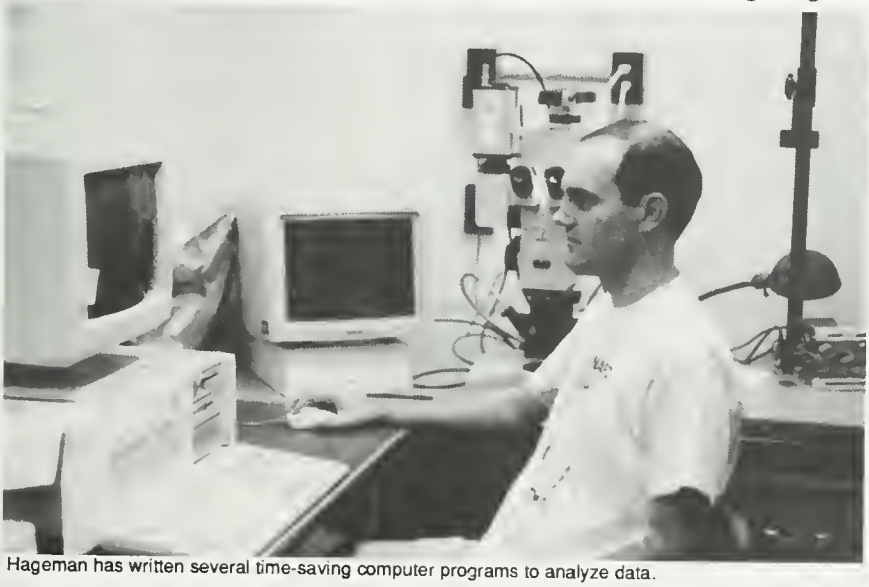
Professional and personal integrity are the qualities that Hageman respected most in Blake. Given the pressures to publish, Hageman believes there are too many opportunities to conduct less-than-thorough research.

"He's very thorough," Hageman said, "but not to the point of not getting things done. He does good, solid work that you don't fret over too long. Once it reaches a certain level or standard, then you go ahead and publish. I tend to be much more of a wild idea person and say, 'Hey, let's do this.' And Dan will say, 'Well, let's think about it.' Sometimes he's right, but other times I've convinced him to proceed. It's been a mutual thing."

"It's weird," he said. "I go to conferences and I see people my age working (the people) like politicians.

It was also Blake who encouraged Hageman to take statistics and computer courses to help his research. Hageman has written several computer programs that collect and analyze data thereby decreasing the chance for error.

"Up to that point, it's just kind of gee-whizzy. But then it dumps the data into an Excel spreadsheet that is already calibrated for magnification. So a lot of time is saved. Then I can dump it into any computer on campus and run all different kinds of numerical analysis on it."



Hageman has written several time-saving computer programs to analyze data.

Lab preps aren't tedious, but getting results back is the thrill.

To some this may all sound like tedious work, and Hageman can't deny that it is sometimes.

"I know a friend who gets excited because every time he opens a bryozoan," Hageman said. "It's something new that nobody's looked at. It's been laying there for 300 million years, and nobody has ever been in there except for him. I do that to a degree; it's pretty interesting, but I get much more of a thrill when I start getting results back. But I don't hate doing the lab prep. It's something you can listen to music and think about other things while you're doing it."

Until recently, one of the biggest things on Hageman's mind was finding a job. In a time of tight budgets and gloomy economic outlooks, it seemed nothing was available and the frustration ran high.

"It was more of a disappointment than I thought it would be not to get a job, a permanent position," he said. "Psychologically, I could see the pattern happening. But nevertheless, after so many years of schooling, it's still disappointing that the situation isn't different. I'm not blaming anyone or anything; it's just that you can't do what you want to do. I think I have a lot to offer.

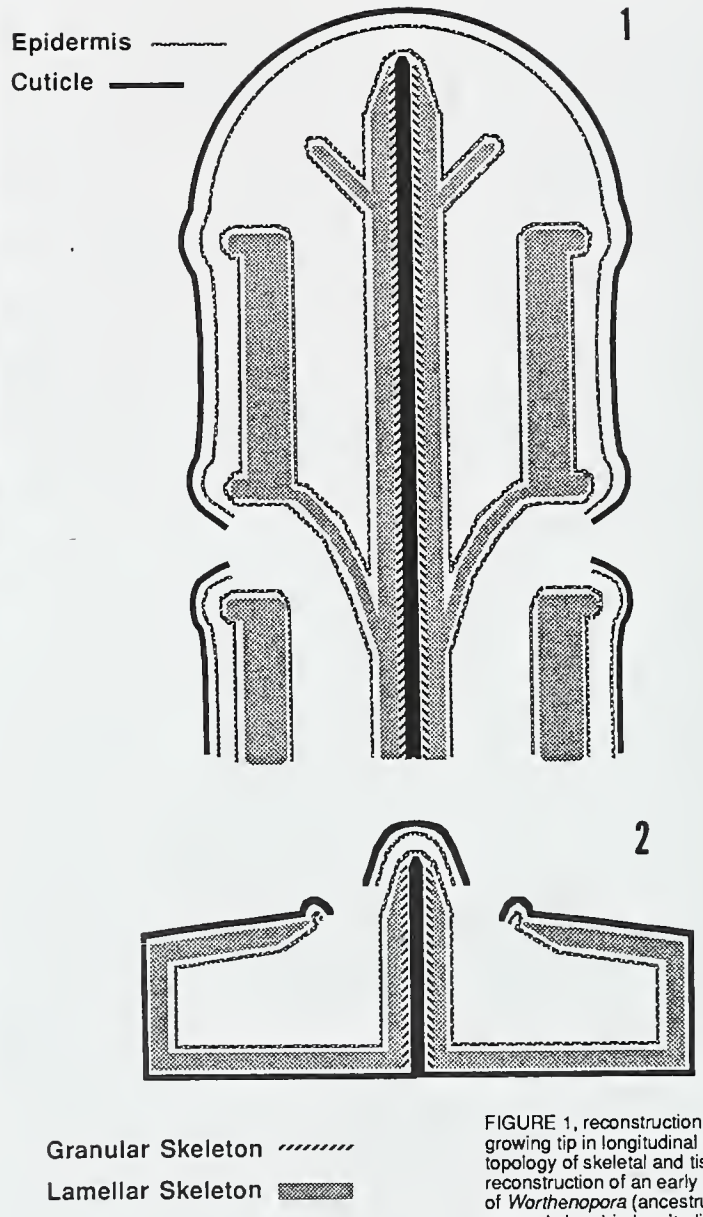


FIGURE 1, reconstruction of a *Worthenopora* growing tip in longitudinal section, illustrating topology of skeletal and tissue layers.2, reconstruction of an early growth stage of *Worthenopora* (ancestrula and first asexual clone) in longitudinal section, illustrating topology of skeletal and t issue layers.

"It's weird," he said. "I go to conferences and I see people my age working (the people) like politicians. I realize that you have to do some of that or you won't make it. I do enough that I feel comfortable with it. I have enjoyed meeting people from all over the world. It's fun, then, to go to another conference and see people again. So I hope it's my friends and colleagues that I'm making sincere contacts with that are the ones that pay off."

Hageman did secure a one-year sabbatical replacement, beginning this fall, at Appalachian State University in Boone, North Carolina. He will teach courses on invertebrate paleontology and historical geology, and analyze the data he has collected at the U. of I. Ideally, he would like to obtain the grant funding to recreate the computer setup and programs he developed at Illinois.

Alumni News

GeoSciences *is for alumni and largely about alumni. Please take the time to complete and return the information form you will find at the end of this issue. Just as you like to read about classmates and other alumni, they'd like to know more about you. Your news is important to them and to us in the Department. Send a recent photo along, too, but let us know if you want it returned.*

The following notes are divided by decade. Those who were affiliated with the Department during part of one decade through to the next are listed according to the last degree received. Within each decade, items are listed in yearly sequence, not alphabetically.

FACULTY

Associate Professor **Jay D. Bass** was named to the board of associate editors of the *American Mineralogist* journal.

Keros Cartwright, principal geologist and head of the Special Studies and Hydrogeology Research Laboratory at the Illinois State Geological Survey and adjunct professor in the Department, has received an award for distinguished service in hydrogeology from the Geological Society of America.

Structural geologist and former Department faculty member from 1963-64 **Hans Laubscher** was featured in the September 1991 issue of *GSA Today*. He recently retired from the faculty of the University of Basel, where he also received his Ph.D. in 1947.

He continues to be a productive researcher involving the interpretation of deep seismic profiles.

FORTIES

Paul K. Sims (A.B. 40, M.S. 42) is at the U.S. Geological Survey in Denver, Colorado, specializing in Precambrian geology of the Lake Superior region. He received a U.S. Department of Interior Distinguished Service Award in May 1991 for research and administrative duties at the USGS and the Minnesota Geological Survey.

William Prescher (B.S. 42) of Casper, Wyoming, died March 6 after a short illness at the age of seventyone. From the late sixties until he retired in 1985, Prescher was associated with the Bureau of Land Management.

He was a Navy veteran of World War II, serving as a photo interpreter on the *USS Independence*. He attained the rank of lieutenant junior grade.

His wife, daughter, brother, two sisters and grandson survive.

Howard E. "Ed" Simpson (M.S. 42) has published *Bedrock Geology of the Bristol Quadrangle, Hartford, Litchfield and New Haven Counties, Connecticut*, (1990, U.S. Geological Survey Bulletin 1573).

Edward L. Dillon (B.S. 47, M.S. 49) is owner and president of Eastern Shelf Production Co., a Midland, Texas-based consulting company engaged in originating and reviewing exploration programs for oil and gas in West Texas, New Mexico, North Africa and Israel. In August 1989, he retired as chairman of the board and chief explorationist for Reserve Development Corp. in Dallas.

Dillon was recently honored by the American Association of Petroleum Geologists at a Dallas reception for former AAPG Distinguished Lecturers.

He married Barbara Ann Barker in April 1987. They have five children (three his, two hers) and six grandchildren (his). They will soon have two more grandchildren (hers).

"We enjoy living in Steamboat Springs," he writes, "and find little difficulty in operating a Texas-based consulting business from here by fax, phone and Federal Express."

FIFTIES

Robert E. Murphy (B.S. 50) retired in December 1988 after thirty-five years with Chevron as development geologist, exploration geologist and formation evaluation specialist. He worked at several locations in Texas, the Los Angeles gulf coast and Bahrain Island in the Persian Gulf. His last assignment was as formation evaluation consultant for Chevron's eastern region in New Orleans.

In 1991, he was a contributing author of "Gulf Coast Logging," which appeared in the New Orleans Geological Society publication, *An Introduction to Central Gulf Coast Geology*.

Haydn H. Murray (B.S. 48, M.S. 50, Ph.D. 51) teaches graduate courses in clay mineralogy, geology and applications of industrial minerals, coal geology and X-ray techniques in the Department of Geological Sciences at Indiana University. He went to IU in 1973 after sixteen years with the Georgia Kaolin Company. In that time, he has supervised approximately seventy-five masters and Ph.D. theses. He most recently had four postdoctoral research associates and was supervising seven Ph.D. students in the final year of the dissertations.

Last year, Murray was president of the American Institute of Professional Geologists. He also has been the IU faculty athletic representative since 1984—a time consuming but enjoyable job, he writes.

Lorence Collins (B.S. 53, M.S. 55, Ph.D. 59) co-authored the recently published *Expanding Geospheres* with Canadian economic geologist C. Warren Hunt and Russian seismologist E.A. Skobelin.

"(It) includes many new hypotheses on the origin of granite, earthquakes, ore deposits, diamonds, oil and coal," Collins writes. "It breaks with traditional views on the evolution of the earth and plate tectonics. It gives answers to the enigma of Po halos and discordant zircon dates as well as puzzling dates obtained from Rb-Sr and Sm-Nd ratios. It promises to upset the apple cart in regard to modern dogma."

Collins is a professor of geology at California State University-Northridge. His wife, **Barbara Schenck Collins** (Ph.D. 55, M.S. 60 LAS) is a professor of biology at California Lutheran University.

Meredith E. "Buzz" Ostrom (M.S. 54, Ph.D. 59) was named the 1991 recipient of the Public Service Award by the American Institute of Professional Geologists. He has held a variety of positions with the Illinois State Geological Survey and the Wisconsin Geological and Natural History Survey. He served as state geologist and survey director in Wisconsin

Ostrom

until 1990. Ostrom is also a professor emeritus in the Department of Environmental Science at the University of Wisconsin-Extension.

He has served on more than two hundred state, federal and professional committees and councils, chairing more than forty of them. Ostrom is also known throughout Wisconsin for his appearances in the media to educate the public on geologic matters.

Donald L. Ballmann (B.S. 55, M.S. 56, Ph.D. 59) is the project geoscience manager for Battelle Memorial Institute that is searching for a suitable site for a low-level radioactive waste disposal facility in Connecticut. In his tenth year with Battelle, Ballmann moved to Connecticut in January 1991 after having served as its geoscience manager for the Illinois low-level waste siting project.

John B. Vercellino (B.S. 56) is retired and raises Brangus cattle on his East Texas ranch. He retired in 1986 as chief production geologist for Exxon after thirty years, then had joined Sandefer Offshore as chief operating officer.

Richard F. Mast (B.S. 57, M.S. 60 Eng.) received an Honor Award from the Secretary of the Interior at the 56th Departmental Honor Awards Convocation in Washington, D.C., last May.

SIXTIES

Valentine E. Zadnik (M.S. 58, Ph.D. 60) is the contracts and grants officer for the U.S. Geological Survey Office of Energy Resources and Marine Geology in Reston, Virginia. He receives, evaluates and funds research proposals from university and state geological surveys for research areas of geology and geophysics related to energy research, marine geology and coastal research.

His sons, Rudy and Jerry, will have received masters and Ph.D. degrees this summer from Georgia Tech in electrical engineering. His daughter, Janelle, is a mechanical engineer.

John Bredehoeft (M.S. 57, Ph.D. 62) received the 1991 Science Award from the National Ground Water Association. He also was appointed editor of the *Journal of Ground Water*, in Dublin, Ohio. Bredehoeft is a research geologist for the U.S. Geological Survey in Menlo Park, California.

Director of environment for the World Bank **Mohamed T. El-Ashry** (M.S. 63, Ph.D. 66) was featured in the

March 1992 issue of *Geotimes*, published by the American Geological Institute, in an article titled "Earth Scientist at the International Development Front."

Daniel A. Textoris (Ph.D. 63) teaches undergraduate and graduate geology courses at the University of North Carolina-Chapel Hill and performs research in sedimentary geology. He spent a week with **F. Michael Wahl** (M.S. 57, Ph.D. 58) reviewing the geology departments at Tulane, the University of New Orleans and LSU for the Board of Regents. He also met with many U. of I. alumni, including **Ray Ferrell** (M.S. 65, Ph.D. 66) and **James Roche** (M.S. 67, Ph.D. 69).

"Wish more of my early '60s classmates would write and let us know how life is treating them," he says.

Professor of geology at the University of Wisconsin-Parkside **James Shea** (Ph.D. 64) was honored by the National Association of Geology Teachers for excellence in geoscience writing by receiving the first James H. Shea Award, established in his honor.

For the past seventeen years, he has been editor of the *Journal of Geological Education*, an international publication for geology teachers. The journal features articles by leading world geologists on new approaches to teaching geology, research results and educational applications of innovations and instrumentation.

Shea joined UW-Parkside's geology department in 1967.

SEVENTIES

Bruce A. Masters (Ph.D. 70) accepted early retirement from Amoco Production Co. in Tulsa, Oklahoma, where he was a special research associate. He will enter private consulting on worldwide Mesozoic/Cenozoic biostratigraphy.

Donald Eggert (A.B. 71) is an environmental geologist at the Indiana Geological Survey who is responsible for seismic hazards reduction. He's been involved with mapping soil liquefaction and collecting soil shear-wave data.

Eggert recently finished two projects to collect downhole shear-wave velocity data for nine Indiana urban areas, with emphasis on Evansville, Indiana. He also has been involved in the mapping of soil liquefaction features produced by a major prehistoric earthquake in the Wabash Valley.

"If you are still looking for **Denver Harper** (B.S. 71)," Eggert writes, "he is two doors down the hall here at the IGS. He finished his Ph.D. several years ago and is working on hydrologic problems related to coal mining."

William Size (Ph.D. 71) is director of the Geosciences Program at Emory University in Atlanta, which is slowly rebuilding after the recent closure of the Geology Department.

Size recently returned from six months' leave in New Zealand where he was working on a field project with a layered gabbrodiorite complex on the South Island. Now he has moved back into a newly renovated Geology Building. Size wrote that he also was looking forward to the International Geological Congress in August in Kyoto, Japan, as well as field trips.

H. Richard Naslund (B.S. 72) is an associate professor and chairman of the Department of Geological Sciences and Environmental Studies at the State University of New York at Binghamton. His research projects include Skaergaard Intrusion, Greenland; Palisades Sill, New York and New Jersey; and ODP Hole 504B (sheeted dikes in the equitorial Pacific).

Naslund has three children: Sterling (5), Skye (3) and Neelam (11 months).

"After twenty years in the oil and gas industry, working Texas to Alaska, Florida to California, I've finally fallen victim to the L-word (layoff)," **Jim Hooten** (M.S. 72) writes. "Great experiences, great fun, great people--but with the industry still in decline (thanks to our wise lawmakers), I've come to the realization that it's time to move on."

Hooten is now the Colorado account representative for the Denver-based EarthSense Companies, specializing in bioremediation product for hydrocarbon contaminated sites. He says it's "a small, newly formed company with state-of-the-art technology resulting in substantial cost and time savings" and welcomes phone calls from anyone curious or interested.

The expanded goals of the American Association of Petroleum Geologists were outlined by **Nahum Schneidermann** (Ph.D. 72) in the September 1991 issue of *Explorer*. Schneidermann is head of AAPG's Committee on International Liaison.

Patricia A. Santogrossi (B.S. 74, M.S. 77) is senior geologist with Marathon Oil Company in Houston, Texas.

Brian J. Cardott (B.S. 77) has been an organic petrologist/geologist at the Oklahoma Geological Survey since 1981. He does petrologic characterization of organic-rich rocks in Oklahoma, specifically involved in ongoing studies of coals, hydrocarbon source rocks and asphaltite deposits.

Cardott is the 1991-92 vice president of The Society for Organic Petrology

(TSOP), co-host of the 1993 TSOP annual meeting and co-editor of *Oklahoma Geological Survey Circular* for 1993. He and his wife, Kathy, have two children: Lauren (10) and Evan (7). They recently moved into a new custom-built home in Norman.

Bruce A. Johnson (B.S. 79, B.S. 79 Eng.) is the reservoir engineering manager in the Offshore Producing Division of Texaco E & P Inc. in New Orleans, Louisiana. He's been with Texaco since graduate and was recently transferred to New Orleans after four years in Jakarta, Indonesia, with a Texaco affiliate.

He and his wife, Ann, have a son, Russell Alan, who was born in September 1991.

EIGHTIES

John Jenkins (B.S. 80) moved to Oregon in 1990, "happily away from projects in the urban sprawl of California." His work for Cascade Earth Sciences Ltd. is mainly hydrogeologic investigations of sludge and waste water re-use sites, landfills and some leaking UST sites.

He and his wife, Gretchen, a fellow Illinoisan he met in California, now have a son, Ryan, "who, incidentally, is about one week younger that **Sandy Sopkin-Haupt**'s (B.S. 80) baby."

"We love Portland as there is plenty of good jazz and fresh air," he says.

Corinne Pearson (M.S. 81) married Tom Krisa in 1987. She left her job and Houston, Texas, when Tom was offered a transfer to London. Their daughter, Caroline, was born Nov. 17, 1991, so Mom plans to provide her full-time care for a few years.

Sharon Geil (B.S. 82, A.B. 82 LAS) is program manager for the Installation Restoration Program (IRP) for the Air Military Command, which has its headquarters at Scott Air Force Base in Illinois. IRP is the Department of Defense's version of Superfund, she says. She works with the bases and HQUSAF to clean up hazardous materials sites across the Air Military Command.

She bought a house in December 1991 and plans to put in a couple of acres of native prairie on an old, over-used horse pasture.

Valla (Jones) Earl (B.S. 84) is a transportation engineer with the Washington State Department of Transportation. She and her husband, David, purchased a home on 5.5 acres near Fairchild Air Force Base, where David is practicing as a flight surgeon. They have two boys: Jonathan David (born May 21, 1990) and Daniel Joseph (born May 30, 1991).

"The spare time we are afforded," she writes, "is spent hunting, traveling, horse back riding and romping with our boys.

"To Carolyn & Kari: The tattoo has faded!"

David F. Brutcher (B.S. 85) is a hydrogeologist for the Collier County Government Environmental Services Division in Naples, Florida. He provides ground water resource management and protection, wellhead protection ordinance development and implementation, monitoring and assessment of potable ground water resources and technical assistance to permit reviewers.

Brutcher recently has become certified in the state of Florida as a professional geologist.

"The surf, sun and subtropical climate of Florida's southwest coast have won me over," he writes.

Neil T. Patterson (B.S. 85, M.S. 89 Ag.) is a soil scientist working on the Soil Survey Update for Owen County for the USDA Soil Conservation Service in Spencer, Indiana.

He was a rural forestry extension agent in Senegal, West Africa, with the Peace Corps from June 1989-September 1991. His plans were to marry fellow Peace Corps volunteer Amy Stephenson this past August 15.

Virginia "Ginny" Colten-Bradley (Ph.D. 85) is working on Yucca Mountain for the U.S. Nuclear Regulatory Commission.

Mark P. Fischer (B.S. 87) and **Tamara (Webb) Fischer** (B.S.W. 87), had a seven-pound, twelve and a half-ounce girl December 10. Her name is Sarah Caroline. "Almost three weeks early and quite a surprise," the new father writes. "We all are enjoying ourselves to the fullest." The family lives in State College, Pennsylvania.

Charles Weiss (M.S. 87. Ph.D. 89) and **Jean (Schwartz) Weiss** (B.S. 86) are the parents of Lauren Elizabeth. She was born at 5:26 p.m. on April 13. Lauren weighed in at eight pounds, nine ounces and was twenty-one inches long. The family lives in Clinton, Mississippi.

Russ Perry (B.S. 88) is an environmental project manager for Growmark, Inc., a regional agricultural supply cooperative in Bloomington, Illinois. For the last three years, he was a hydrogeologist involved with environmental site investigations for Burlington Environmental Inc. in Columbia, Illinois.

CORRECTION

Donald C. Bennett (A.B. '31) lives in Lakeland, Tennessee. This was incorrectly reported in the spring 1992 issue of *GeoSciences*.

Please take a few moments to let us and your classmates know what you've been doing: promotions, publications, election to office, marriages, parenthood, moving, awards. We'd all like to hear from you!

Name _____ Response date _____

Home Address _____ Office Address _____

_____ _____

_____ _____

_____ _____

Home Phone _____ Office Phone _____

Degrees from Illinois (with year) _____ Degrees from other universities _____

_____ _____

_____ _____

Present employer and brief job description _____

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Other news you would like to share _____

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Your comments on the alumni newsletter _____

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Place
Stamp
Here

Editor, *GeoSciences*
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University of Illinois
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1301 W. Green Street
Urbana, IL 61801-2999

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245 Natural History Building
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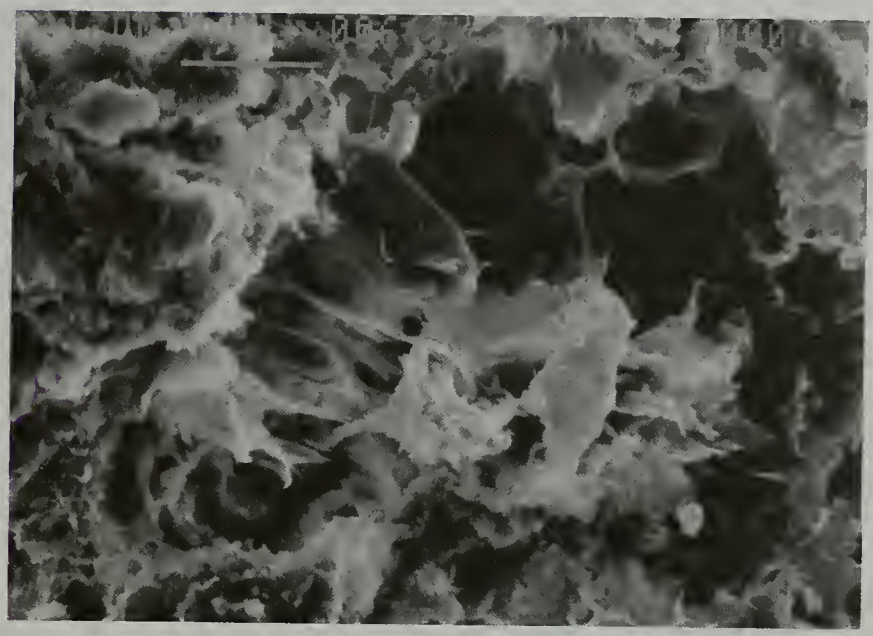
University of Illinois at Urbana-Champaign

Department of Geology
Alumni Newsletter
Spring 1993

GeoSciences



UNIVERSITY OF ILLINOIS

GeoSciences

Alumni Newsletter SPRING 1993

Cover Photographs: Top: Sample 1R132-A6.6, 1174.8' (depth); unit: 52.8' thick tuff; Authigenic quartz and later smectite fill a pore in a sample taken from the middle of the tuff. The authigenic quartz and late smectite represent a higher grade of alteration observed in the Hosselkus drill hole. Bottom: Sample 2R105-A7.25, 1086.25' (depth); unit: 1.4" tuff; A pore filled with smectite (early) and clinoptilolite.

GeoSciences is the Alumni newsletter for the Department of Geology, University of Illinois at Urbana-Champaign. It is published in September and February of each year.

Staff: Department Head: R. James Kirkpatrick; Asst. to the Head: Peter A. Michalove; Editor: Vanessa Faurie; Designer: Jessie Knox; Admin. Secretary: Patricia Lane.

Message from the Department Head

R. James Kirkpatrick

Dear Alumni and Friends:

The University of Illinois, like most other universities, is undergoing a period of self-evaluation and analysis, and the Geology Department is part of that process. It is clear that the resources needed for business as usual in higher education are no longer available. The University must look to reallocation as a major source of funds to meet future challenges and needs.

At the campus level, a Budget Priorities Committee is evaluating possible large-scale shifts of funding and people. Within the College of Liberal Arts and Sciences, each department was evaluated last fall, and a college-wide committee is now considering those evaluations and will make final recommendations in the spring. Based on an interim report, we feel the Geology Department will fare quite well in those recommendations.

Part of the campus-level process is the so-called Environmental Task Force, which I will chair. The major objectives of this group are to determine the present activities on campus regarding environmental education, research and service; to recommend areas of potential expansion of these activities; and to evaluate ways of better integrating these activities across campus. I am looking forward very much to the work of this task force because its viewpoint is foresighted (How can we improve?), rather than in some sense negative (Where will we take reductions?).

The Department was well out in front of the University on this issue when we proposed the Environmental Option in our B.S. curriculum about two years ago. That curriculum is now in place, and we hope that it will begin to attract students this year.

News from within the Department includes the remodelling program that will take place mostly over the summer. As I noted last fall, funding for this program is coming from the National Science Foundation and the campus. At this time, the architectural and engineering plans are nearly complete, and we hope to go out for bids in the next month or so. We expect this to be the last phase of the remodelling program. When it is completed, about 85 percent of our teaching and research space will have been significantly improved.

Enrollment in our introductory courses continues to expand beyond our expectations, with the enrollment now far exceeding any on record. We estimate that approximately 20 percent to 25 percent of the undergraduate students on campus now take a Geology course.

Sincerely,

Jim Kirkpatrick

R. James Kirkpatrick
Professor and Head

GeoNews

"(The book) focuses on fundamental observations under the petrographic microscope, their classification, and their theoretical and practical implications, rather than on speculations and far-reaching theories," Carozzi writes.

New GeoThrust chair receives honor as outstanding educator

Haydn H. Murray, B.S. 48, M.S. 50, Ph.D. 51, who recently was named chairman of the GeoThrust Committee, received the 1992 Outstanding Educator Award from the Eastern Section of the American Association of Petroleum Geologists.

The Indiana University professor was recognized "for attaining global stature as mentor to two generations of aspiring economic geologists and to the world community of industrial mineralogists."

After serving in World War II and earning his doctorate at the U. of I., Murray began teaching at Indiana in the early fifties. In 1957, he then began a sixteen-year tenure with the Georgia Kaolin Company and was executive vice president when he left to return to Indiana in 1973. For the next eleven years, Murray served as Geology Department chairman.

Throughout these years, Murray received many honors for his work and served on the board of various professional organizations.

In 1984, he stepped down from the department chairmanship but has continued his writing, research and teaching. He also has been the faculty representative from Indiana University to the Big Ten Conference and to the NCAA.

Murray's more recent honors include serving as president of the Society of Mining Engineers (1987-88), president of the American Institute of Professional Geologists (1991) and trustee of the American Geological Institute Foundation.

Carozzi writes text on sedimentary petrography

Professor Emeritus **Albert V. Carozzi** recently published his fourth book, *Sedimentary Petrography*, which is a practical overview of the entire field that he hopes will appeal to professional geologists and students alike.

There are two reasons why Carozzi decided to write the new textbook: First, he believes he is one of the last left who has an overview of a field now teeming with specialists; and second, the book features 192 high-quality color plates of representative classes of sedimentary rock as seen through a petrographic microscope.

Professor Emeritus **Albert V. Carozzi**

With an emphasis on practicality, he covers ten major rock groups: sandstones, rudaceous rocks, argiliaceous rocks, volcaniclastic rocks, limestones, dolostones, siliceous rocks, phosphorites, ironstones and evaporites.

"(The book) focuses on fundamental observations under the petrographic microscope, their classification, and their theoretical and practical implications, rather than on speculations and far-reaching theories," Carozzi writes in the book's preface. "... the value of any theory or interpretation is a direct function of the quality of the observations on which it is based."

The categories of sedimentary rocks are presented in systematic packages that include introduction, classification, depositional environment, detailed petrography and diagenetic evolution. Then each subject

ends with reservoir properties and updated references in order to pursue more information from specialized sources. The color plates of photomicrographs enable the reader to make first-hand observations of the more important and textural details of those rocks.

It took Carozzi three years to complete the book, and he readily credits his graduate students for their contributions to the work. Carozzi has published three previous volumes about this fast-moving area of geology. His first book about sedimentary petrography was published in French in 1953. The second was printed in 1960 shortly after Carozzi came to the United States, and he re-edited it in 1972.

"(The current book) attempts to show that a synthesis, regardless of its potential shortcomings, is an indispensable and opportune intellectual exercise, particularly at a time when extreme specialization threatens to lead toward the loss of the general overview indispensable to students and professionals alike," Carozzi writes.

Looking back, he says he is pleased with the new book. "I'm satisfied. Yes," he says and smiles. "I only hope I don't have to do it a fourth time."

Carozzi is now spending his time writing about the history of geology in the eighteenth century on what he calls the theories of the earth, and in particular, the ideas of Horace Benedict de Saussure.

Share the memories

Do you remember a funny or touching moment from one of your field trips?

Send us a memorable anecdote about a field trip you went on during your time in the Geology Department. What happened? When was it? What faculty members were along? If we get some interesting responses, we'll share them with fellow GeoSciences readers in a future issue. If you have any good photos, send those, too. We'll return them.

Send your (legible) remembrance along with your name, address and daytime phone number to:

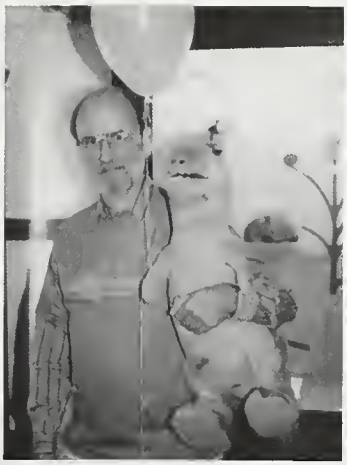
Field Trips
c/o GeoSciences Editor
Department of Geology
245 Natural History Building
1301 W. Green Street
Urbana, IL 61801

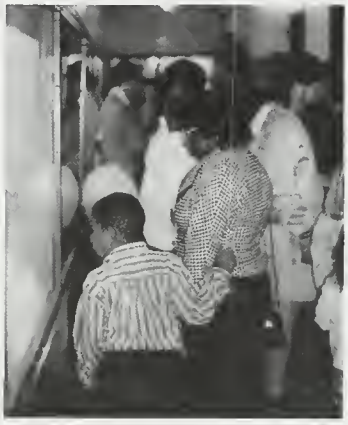
YOU'RE INVITED

Attend a reception for all ***U. of I. Geology alumni***

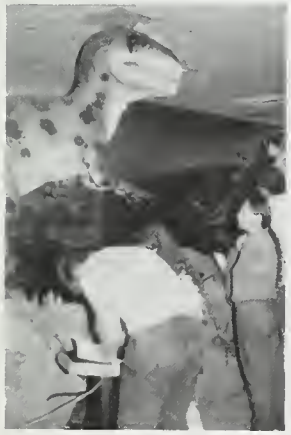
Monday, April 26
5:30-7:30 p.m.
Eglinton & Winston Room
New Orleans Hilton

The national meeting of the American Association of Petroleum Geologists that will be held in New Orleans at that time.





NHB 100th Birthday Party & Dinamation Exhibit



Professor Ralph Langenheim

Party honors retirement of Langenheim

Under the pretense of attending a wedding reception with a friend, Professor **Ralph Langenheim** unsuspectingly walked in to a surprise retirement dinner in his honor January 16 at his favorite area restaurant, The Bayern Stube in Gibson City.

Organized by **Pius Weibel**, M.S. 82, Ph.D. 88, of the State Geological Survey, and Administrative Secretary Pat Lane, the event featured guests dining on German fare amid an atmosphere of beer steins, mounted elk antlers and polka music. A slide presentation showed Langenheim from various stages of his life going as far back as infancy. Guests had to interrupt frequently to share an anecdote here and there when a particular image sparked a memory. A research fund also was established for Langenheim to continue his work.

Department Head Jim Kirkpatrick made some comments about Langenheim's career, as did others. And a bound volume featuring letters of remembrance and well wishes from colleagues, friends and former students was presented.

"I realize what a significant and positive effect you have had on the development of many people who have been students here," Kirkpatrick wrote to Langenheim in the book.

Others shared their thoughts on the occasion of his retirement:

"I have always appreciated and admired your strong commitment to getting students into the field, both at the 100-level and with our majors. You have influenced a large number of students in the field, and it definitely has been to their benefit."

— Professor & Associate Head
Hilt Johnson
M.S. 61, Ph.D. 62
Mahomet

Langenheim spoke to guests at a dinner honoring him on the occasion of his retirement.

Colleagues, students and friends surprised the guest of honor.

"I could write endless pages on the numerous hilarious episodes which punctuated our many trips to Arrow Canyon as much as we filled pages of many periodicals on the original scientific results we all reached in this endeavor."

— Professor Emeritus
Albert V. Carozzi
Champaign

"So now the last of *les originales* has left the flock. ... Those youngsters will just have to manage howsoever they can without us."

— Professor Emeritus
Donald M. Henderson
Urbana

"Ralph, you've participated in a positive way in the lives of so many people, with a never-ending sense of humor and spontaneity sprinkled with just the right amount of guidance while allowing full latitude to your students to follow their own instincts."

— Joan Gordon
M.S. 62
Chicago

The Grand Tetons were the backdrop for many a field camps over the years.

"Many memories linger, and they include the hot, cold, wet, dusty Arrow Canyon Range days: watching the preparation of and actually consuming the 'Langenheim Surprise' breakfasts and meat(?) with cheese sandwiches packed for lunch and the evening gatherings around the ol' camp fire for dinner and discussion. ... You were my academic and personal mentor during my formal graduate education at U. of I. You were an inspiration and example to follow by your dedicated, outspoken, straightforward and hands-on approach to research, investigation and study. ... You also brought out the need to strive for excellence, persevere to complete a task and the 'thrill of the hunt' for undiscovered or unexplained geologic truths."

— John W. (Wally) Marks
M.S. 66
Spring, Texas

"Thank you for having faith in me and for being more than just a professor--for being a friend."

— Sharon Geil
B.S. 82
Smithton

"Well I'll be damned (I've always wanted to use that on you, as you have for years every time I call or see you!); you are retiring."

— Mike Hansen
Ph.D. 75
Dallas, Texas

"A great deal of our time together has been on field trips. These experiences have proven to me that you are a true Natural Historian. Your combined knowledge of geology, botany and cultural history is a living example of the "Liberal Arts" education which you so strongly advocate."

— C. Pius Weibel
M.S. 82, Ph.D. 88
Champaign

"There are very, very few people who would put so much energy and devotion into dealing with crazy college kids on field trips, field courses

Students came away from the field camps with memories as well as knowledge.

and classes year after year after year. ... I will always be indebted to you because if it weren't for your steadfast encouragement during my stay in Urbana, I would not have continued in geology and thus would have been robbed of all the enjoyment and intrigue that the field of geology has given me, and will continue to offer me in the years to come. I owe you a very, very big thank you, Doc. I hope that perhaps I could have such a positive impact on someone during my life."

— Alice Benkovich Shilhanek
B.S. 81
Bellington, Washington

A Langesaurian Limerick

There once was a Professor named
Langenheim
Whose eyebrows roamed Arrow
Canyon every Wintertime
But his geological mania
Led him to Albania
And curatorial stasis
In a Natural History Museum Pantomime!

— Dean Rose
B.S. 83
Champaign

Alumni
Profile:

Robert S. Dietz

"I never said I told you so. If I think I'm right, that's enough for me. I've made some mistakes, but I also have a pretty good batting average on rather oddball ideas."

He's a rebel with a few causes

Robert Dietz, A.B. '37, M.S. '39, Ph.D. '41, is a controversial figure, to say the least. His geological theories about sea-floor spreading and meteorite impacts took years to gain widespread acceptance and are now established models. What we now take for granted as the theory of plate tectonics was once just the bizarre notion of a young scientist in the early fifties.

"I never said I told you so. If I think I'm right, that's enough for me," Dietz said. "I don't really have to convince anyone else. I've made some mistakes, but I also have a pretty good batting average on rather oddball ideas."

That batting average led to Dietz's return to Urbana last fall to accept a 1992 LAS Alumni Achievement Award for his ground-breaking theories. He has also received the Walter H. Bucher Medal, the Alexander von Humboldt Prize and the Penrose Medal, among others. During his visit to the U. of I., the 78-year-old Arizona State professor emeritus recalled the days before his notoriety as a scientific pioneer, when he was a student struggling to make ends meet.

In the early thirties, he hitchhiked from New Jersey "with a bag full of rocks and fossils" and arrived at Illinois to study geology.

"I lived in a closet with no windows," he said. "But the price was right--five dollars a month. Those were tough years, but they were good years, too."

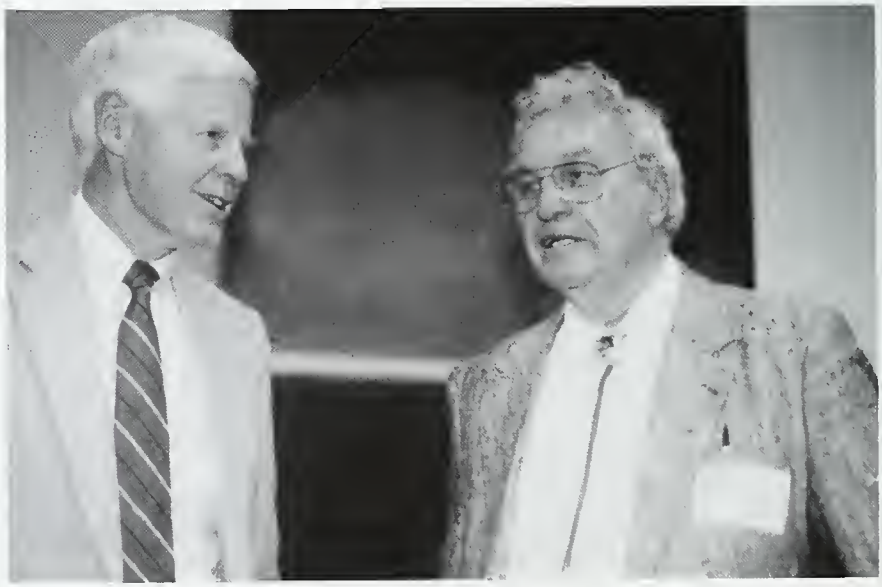
Through the National Youth Administration program established by Franklin D. Roosevelt, Dietz and a friend each earned twenty-five cents an hour working for Professor Francis Shepard. Dietz also went through ROTC training, primarily for the sixteen dollar-a-month pay.

"Buses in town were five cents, so I couldn't afford to ride the bus," he said and laughed. "I used to go on Coke dates for ten cents, or a library date, which was free."

One time, as a way to get free food, Dietz participated in a nutrition experiment.

"We would have a basic diet for three weeks," he said. 'Then we'd have a diet with something special. Part of this diet was three weeks of carrots--500 grams a day of carrots. We had carrot pie, raw carrots, carrot

Professor and Associate Head Hilt Johnson with Dietz.



Dietz presented a colloquium for the Department when he was on campus last fall to receive the LAS Alumni Achievement Award.

everything else. The pigment in carrots is carotene, so in the middle of winter, I had this beautiful Mongolian tan. This is one of the devices you go to when you're a student. I like carrots in moderation, but 500 grams a day is a bit much."

It was during these lean times that Dietz started nurturing his interest in possible impact sites on the earth. He had wanted to do a Ph.D. thesis on the surface of the moon, but it was turned down as "an inappropriate subject for investigation." So he settled for marine clays.

In 1941, the ROTC graduate was called into service and was a Navy pilot in the Army Air Corps' photo mapping wing. He received five medals for his service during World War II.

"I wrote a paper during my time in the Army Air Corps about meteorite impact origins on the moon," Dietz said. "This was a new idea then. This was the first paper since 1895 that anyone suggested than lunar craters were formed by meteorite impacts.

"Then I started looking at impact sites on the continents. I used to fly around quite a bit, ferrying planes. One time I stopped in Rantoul and hitchhiked over to (the quarries at) Kentland, Indiana, and looked at these features. They're cones, you see. You could tell whether the force came from above or from below. The rocks are on end, but if you turn them to their pre-event position--you rotate them counterclockwise--then the cones point up and that means the force came from above. That started me off on locating impact sites based on shatter coning, which no one really believed until about 1970 or so."

Although the beginning stages of the plate tectonics theory had their roots in the thirties when Dietz was working with Professor Shepard off the coast of California, it wasn't until he went to Japan as a Fulbright fellow in 1953 that he said he really got involved with the ideas behind it.

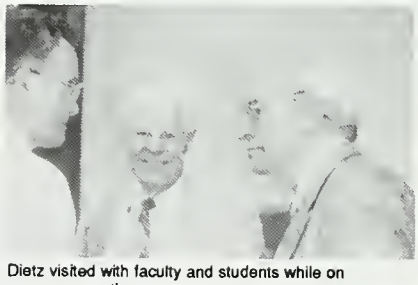
"We began to study the ocean floor after World War II, and we encountered many surprises," Dietz said. "Some of these sea mounds which we thought to be very ancient like the mountains on the moon turned out to be rather young geologically.

When I made the study of the northwest Pacific, I became convinced that the trenches were zones of great underthrusting. Later on when the mid-ocean ridges were discovered and found to have rifts, this made sense to have what I call sea-floor spreading. The idea was from many sources when I worked on the jigsaw about how earth fits together--Humpty Dumpty problems. The missing evidence came from the ocean floor really because the oceans are our windows to the upper mantle."

In 1954, while Dietz was working for the Office of Naval Research, he also forged a collaboration with Jacques Piccard on the development and use of the bathyscaph for manned, deep submersible dives.

In many ways, Dietz was a little sorry to have what he described as "bootleg" work finally become accepted and recognized. "It was more fun to be iconoclastic," he said and laughed. "I hate to be mainstream."

Dietz seems to like his role as the outsider. In fact, he's still raising the eyebrows and, at times, the tempers of fellow scientists and many others with his current areas of interest.



Dietz visited with faculty and students while on campus recently.

"My most meaningful contribution now is fighting creationism, working on the interface between science and religion of the far right," he said. "Population explosion is not the total problem, but it's problems one through nine out of the first ten, aided and abetted by religion. But I can't convince people I shouldn't talk about gene pools and population explosion and religion versus science. They never get any exposure because they're off limits."

Just the sort of topics Dietz likes to take on.

Faculty
Profile:

Wang-Ping Chen

"There's so much data involved in the work to understand one earthquake. But if you've carefully done all the work, it tells you a story. It happens to me in almost every project."

Professor studies earthquakes for everyone's benefit

Professor **Wang-Ping Chen** experienced a lot of earthquakes while growing up in Taiwan. So becoming a seismologist seemed like a logical career choice, particularly after one episode.

"In my senior year, seismologists in Taiwan just started a new seismic network," Chen said. "I was actually taking a class in geophysics when an earthquake struck. We went down to the basement, where the central recording site in located, and I could actually see how seismic waves propagate through the island and trigger different seismograph stations."

Then he laughed. "I know it sounds like a fantasy, but that's exactly what happened."

Chen went on to get his Ph.D. from the Massachusetts Institute of Technology in 1979. He then did postdoctoral work there until his wife, Associate Professor Chu-Yung Chen, was close to finishing up her studies. In late 1981, he arrived at the U. of I. as the Department's first seismologist.

Since moving to Urbana, the Chens strive to maintain a balance between two academic careers and a family of two young children. Consequently, Jennifer, age nine, and Ian, age three, travel extensively with their parents and have their own frequent-flyer accounts.

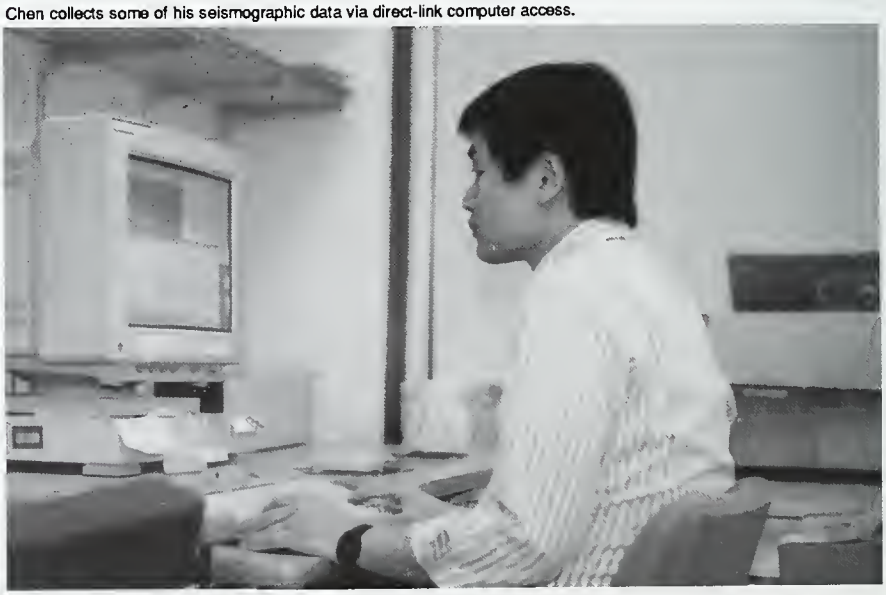
Regarding his research interests, Chen focuses on two major areas. One is how the lithosphere deforms through its life cycles; the other is the physics of earthquakes.

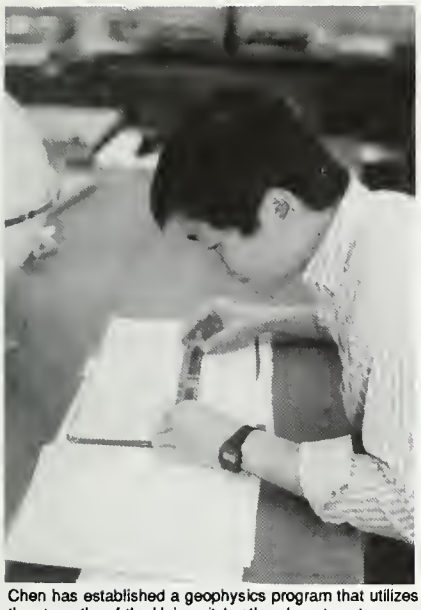
"Plate tectonics says that the lithosphere is created along mid-ocean ridges underneath the ocean," Chen explained. "As new lithosphere grows, it loses heat and forms the ocean floor. Eventually, the lithosphere would have to be recycled back into the mantle of the earth. That happens at places called subduction zones where one piece of lithosphere goes underneath another.

"Once that happens, the lithosphere then plunges deeper into the upper mantle, to depths of at least 650 kilometers, perhaps even deeper."

The whole process takes many millions of years. But along the way, Chen said the lithosphere deforms in various ways. Near the earth's sur-

Chen collects some of his seismographic data via direct-link computer access.





Chen has established a geophysics program that utilizes the strengths of the University's other departments.

face, there is what's called intraplate deformation within the lithosphere; at subduction zones where two plates interact, there is interplate deformation. Once the lithosphere passes through this step, according to Chen, it interacts with different layers in the mantle.

"Eventually, the lithosphere has to disappear," he said. "The final fate of the lithosphere happens somewhere below the depth of 650 kilometers. Some people say the lithosphere goes all the way down to several thousand kilometers; others say it recycles back. My research basically covers many aspects of this life cycle.

"Right now, the evidence shows that right around the boundaries of the upper and lower mantle, near a depth of 500-660 kilometers, the lithosphere definitely deforms. That would suggest that, if the lithosphere does go through the base of the upper mantle, it doesn't go through in a very clean way. It has to deform. That's about all we can say at this point."

To study earthquakes, Chen relies on the voluminous data collected by seismograph stations positioned throughout the world. A combination of microfilm archives, direct-link computer access and gigabytes of off-line data provides Chen with the information to analyze different types of earthquakes.

"The biggest advance in seismology is that now we have very high-resolution data," he said. "This is something that we've known in principle for many, many years, but the technology just wasn't there. An analogy would be in the old days, geologists only looked at rocks with their eyes and maybe a lens, and all of a sudden somebody invented the electron microscope. It's quite exciting that you're going to get better data and more of it."

But despite the mass of information, Chen does not get overwhelmed to the point that there is no clear beginning and end to a project.

"In the sense of understanding each and every earthquake, there is no end," Chen said. "But for me, it does. Typically, every three to five years I feel enough has been done on one subject, and I would like to move to another geographic location or different type (of earthquake) or aspect."

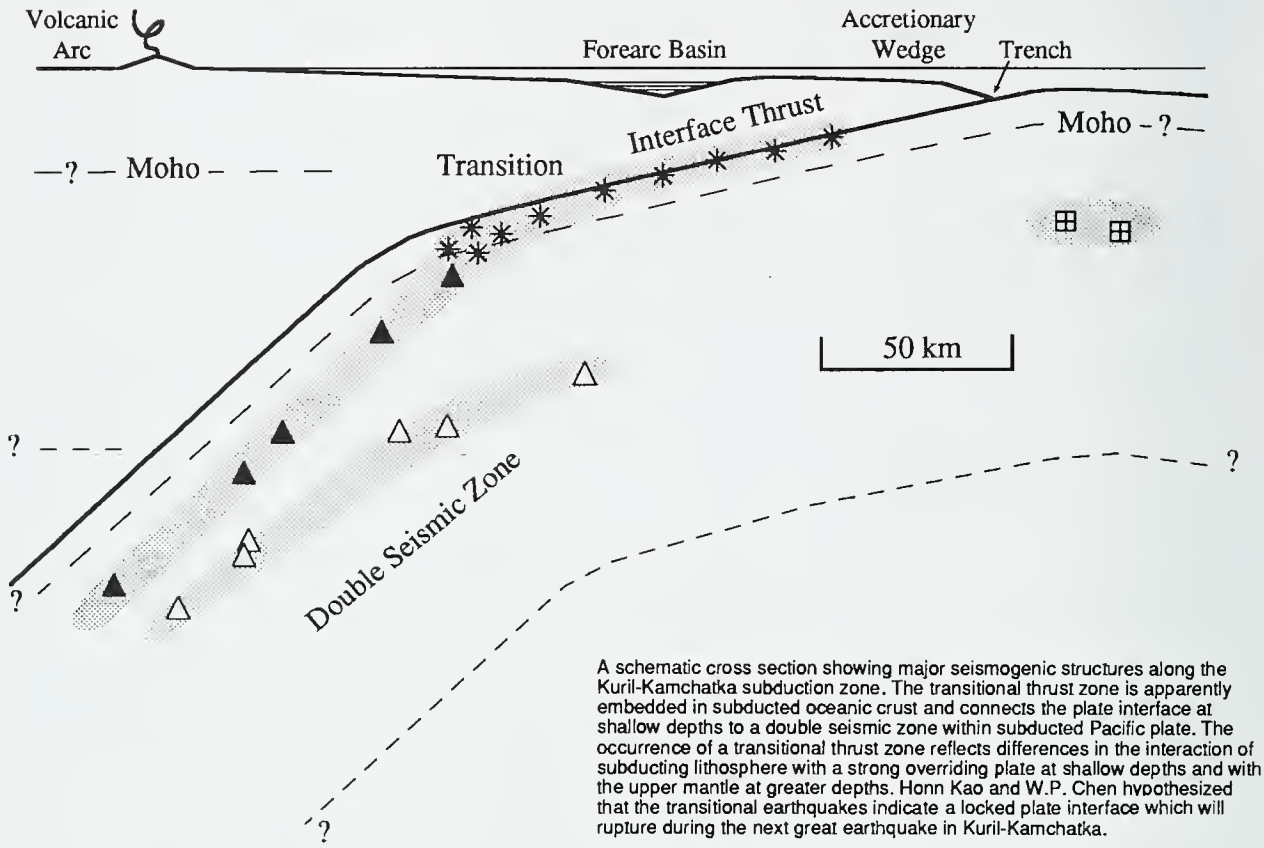
The real pinnacle of any research project for Chen is the time when all the pouring over data begins to reveal a story.

"There's so much data involved in the work to understand a single earthquake," he said. "But if you've carefully done all the work and studied many earthquakes, they tell you a story. It happens to me in almost every project. Each individual piece doesn't tell you anything. Every time you dig a little deeper, then the work pays off. So I haven't been disappointed yet."

For example, Chen once studied a large earthquake that occurred in an active sedimentary basin in China in 1976. The puzzling aspect was that no other large earthquake was known to occur in a sedimentary basin. Chen then theorized that perhaps the basin was formed by the faults producing the earthquakes. At the time, Chen said, it was perceived as "a pretty far-out hypothesis." But now, many people are finding a lot of independent evidence to support that thinking.

Chen also works to eliminate the misunderstandings non-scientists have about earthquakes. The high-profile attention on earthquakes in populated areas causes much concern and interest among people.

Although a lot of time is spent analyzing volumes of data, a story eventually emerges, according to Chen.



A schematic cross section showing major seismogenic structures along the Kuril-Kamchatka subduction zone. The transitional thrust zone is apparently embedded in subducted oceanic crust and connects the plate interface at shallow depths to a double seismic zone within subducted Pacific plate. The occurrence of a transitional thrust zone reflects differences in the interaction of subducting lithosphere with a strong overriding plate at shallow depths and with the upper mantle at greater depths. Honn Kao and W.P. Chen hypothesized that the transitional earthquakes indicate a locked plate interface which will rupture during the next great earthquake in Kuril-Kamchatka.

"They're basically concerned about safety, whether they should buy earthquake insurance, for instance," Chen said. "People are interested in earthquake prediction. That's very important, but here is perhaps where the most misunderstanding is.

"First of all, there is no reliable way of predicting earthquakes. Moreover, prediction does not alleviate property damage. It has a potential of saving many lives, which is important, but it also has a potential of causing problems. If there's a prediction of a large earthquake, it's going to cause panic, a lot of traffic accidents and such. It's a very touchy issue. It's not purely scientific; it's political, it's economical. There are a lot of societal issues involved."

One of the goals Chen has in his teaching, particularly in undergraduate courses, is to help his students become better-informed citizens to make future decisions.

"I like to at least illustrate what science is about and how it works," Chen said. "They should feel that geology is a lot of fun. Teaching definitely takes away the time (from research), but it's a necessary process. If I didn't have a good introductory course in geology, I would not be here today because I would have lost all interest."

Chen also has spent his time at the U. of I. building a research program and teaching a number of courses on seismology and geophysics. And he is pleased with the quality of the geophysics program in the Department.

"I should mention in big block letters that I've been very fortunate to have some very capable graduate students," he said. "They have contributed greatly to my research program.

"What we need to strive for is more cooperation within the Department and with others to launch large-scale experiments to fully realize our potential. What we have going for us is a very strong engineering college, particularly physics, electrical engineering, mathematics and applied mechanics. The students cannot do very well in geophysics if they don't have a strong background in those areas.

"That's one of the attractions and strengths of this campus," he added, "and I think our students are very well trained because of these strengths."

Student
Profile:

David Finkelstein

"I thought it was the most amazing thing. You see a lot of different things in clay mineralogy."

Not enough hours in the day for this research assistant

Clay mineralogy surprised **Dave Finkelstein**. He started out in structural geology at the University of Massachusetts but thought he was too much of a cynic for that field. After trying environmental sciences for a year, he ended up taking a class in clay mineralogy and liked it.

"I thought it was the most amazing thing," Finkelstein said. "You see a lot of different things in clay mineralogy."

His master's project focused on the Mancos Shale in Colorado and Arizona. There had been a large seaway extending from Kansas to Arizona, and small fossils indicate how the water once circulated. The project looked at samples from zones where the warm and cold water were believed to have mixed.

"In the end, we looked at the clay mineralogy as a paleo-environmental indicator," Finkelstein said.

While presenting some of his data on the Mancos Shale at a GSA conference in 1989, he was advised to get his Ph.D. So he began to look at various programs.

"I was asking around about enthusiastic advisers," he said. "And when they were saying Illinois, they were actually saying Steve Altaner."

Shortly after arriving at Illinois, Finkelstein sat down with Associate Professor Altaner and discussed the research projects he is currently involved in. Finkelstein is now working on clay and zeolite mineralogy in the Creede Formation in the San Juan volcanic region of Colorado.

"It sounded interesting," he said. "After reading more and seeing what people have done, you're just spurred on to do something."

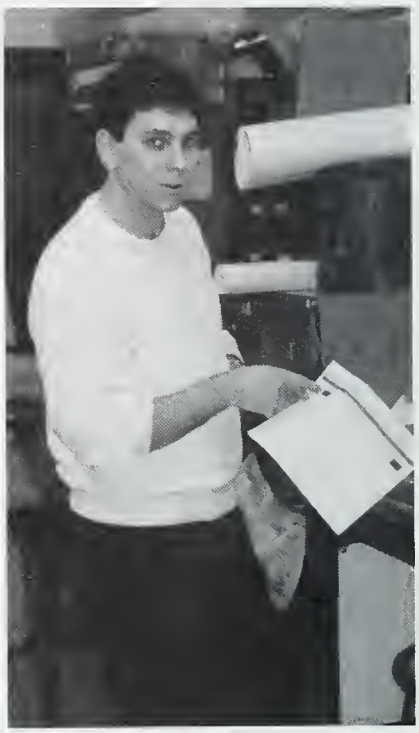
Sediments were deposited in the moat of the Creede caldera, and Finkelstein is looking at the ash layers and the alteration products, trying to see the general trends of what's going on in the clays and zeolites.

As part of the National Science Foundation's Continental Lithosphere Program, two holes were drilled in the sediments. The hole called Airport was drilled just opposite the ore district, and the Hosselkus hole was drilled off to the side and closer to the edge of the caldera.

"Ideally, when I first went out to Denver to pick over the samples and collect what I wanted," Finkelstein said, "I thought the Airport would show highly altered material being opposite the Creede Ore District, and the Hosselkus drill hole would

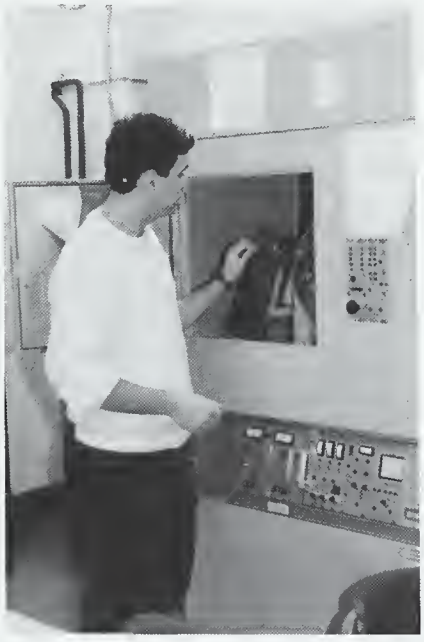
David Finkelstein

An X-ray diffractometer helps to determine mineral identification.



Finkelstein examines data taken from two drill holes in the Creede Formation.

Working long hours are just habit for Finkelstein.



show pretty much nothing. What was surprising to me was that it was the exact opposite. The Airport hole showed less alteration than the Hosselkus."

To explain this, he reasoned that the edge of the caldera (near the Hosselkus site) has coarser sediments. The closer toward the middle (where the Airport site is located), the finer the sediments became. The hot fluids, then, could move more easily through the coarser sands.

Studies on the ores themselves have revealed highly saline fluids, and it has been suggested that there must have been saline-alkaline lakes such as the kind seen in highly evaporative environments.

"We don't have any of the minerals (you would find in that environment, such as evaporites)," Finkelstein said. "Maybe it wasn't such a saline-alkaline lake. Maybe it was just a dilute lake. So that's part of the study. The real questions are, 'What kind of lake was this? What kind of alteration are we seeing?'"

To examine the alterations of the tufts, Finkelstein is utilizing numerous methods. X-raying the volcanic tuffs show the structure and abundance of minerals, the scanning electron microscope show the minerals' shapes. He will also do some oxygen-isotope work and potassium-argon dating. The petrographic microscope will tell him what came first. And finally, a microprobe provides the chemical data.

"I'm doing methods now that are not destructive to the samples," he said. "You always have to keep that in mind: What will my methods do to the samples?"

Finkelstein is very careful and curious about his work. And the time he devotes to it seems to rival most workaholics' routines. Despite all the testing and analyses yet to do, he is shooting for a June 1994 completion date for his thesis.

"I'm hoping," he said. "Given the volume of work and my personal habits of loving to work long hours, I consider that a tangible goal. Not too far out."

Most of his work during the academic year is a balance between research and class work. And the summers are almost always devoted to research. He does enjoy doing other things, however, such as reading poetry and running ("when I'm not spraining an ankle or knee"). But when he gets into his research and starts asking himself more questions, it's hard to stop him.

"It's not uncommon for me to pull a twenty-hour day and then take two days to sleep it off," Finkelstein said. "Sometimes it's just really hard to walk away from something. There are times when, for a couple days, you don't even want to look at it. And then there are times when I say, 'Give me ten more minutes. Just ten more minutes. ...'"

Alumni News

GeoSciences *is for alumni and largely about alumni. Please take the time to complete and return the information form you will find at the end of this issue. Just as you like to read about classmates and other alumni, they'd like to know more about you. Your news is important to them and to us in the Department. Send a recent photo along, too, but let us know if you want it returned.*

The following notes are divided by decade. Those who were affiliated with the Department during part of one decade through to the next are listed according to the last degree received. Within each decade, items are listed in yearly sequence, not alphabetically.

FACULTY

Associate Professor **Stephen P. Altaner** (Ph.D. 85) and Dorothy Fuller were married August 15, 1992. Dorothy teaches at University High School in Urbana.

Professor of botany and geology **Tom L. Phillips** was awarded the Gilbert H. Cady Award in October by the Geological Society of America's Coal Geology Division. He was honored for his pioneering studies of the plant composition of Pennsylvanian-age coals.

Throughout his long tenure at the U. of I., Phillips has trained students in plant morphology, palynology, paleoecology and coal petrography. From 1984-88, he was head of the Department of Plant Biology. He also has been a research affiliate in the Illinois State Geological Survey since 1977.

FORTIES

Edwin F. Bushman (B.S. 41) is a semi-retired consultant and registered professional engineer. He is a specialist in manufacturing, industrial plastics, composites molding and applications, as well as a technical writer in the field of polymers. Bushman holds eight patents and has written more than seventy technical articles. He and his wife, Louise, have developed and operate two orange groves in the Sierra Nevada foothills in Tulare County, California. The couple have six children and live in Laguna Beach.

Bushman had worked for several years on ocean bottom mapping for Francis P. Shepard with Kenneth O. Emery and Robert S. Dietz in Urbana. After Bushman left Gulf Refining Co. in Mattoon in June 1941, he rode out to California Institute of Technology-Pasadena with Dietz, who was soon to enter USAAF active duty.

"His Ford steamed going up a high Colorado pass," Bushman writes. "We had just enough ginger ale left to get the radiator and the Ford over the pass."

Retired geologist **William F. Prescher** (B.S. 42) of Casper, Wyoming, died March 6, 1992. after a short illness. Born in Bloomington, he moved to Casper in 1947 and worked for several major companies in Wyoming. From the late sixties through his retirement in 1985, Prescher worked for the Bureau of Land Management.

Robert C. Honea (B.S. 46, M.S. 48) died September 8, 1992, in Abilene, Texas. He was an independent operator in the oil business and former chief geologist for Tenneco Oil Company.

Lorrie Ross-Holmin (A.B. 46, A.M. 49 LAS) is retired but has done extensive work on researching the Nobel family in Russia prior to the 1917 Revolution. Although everyone knows of Alfred Nobel, she writes, his brother, Ludvig, literally founded the Russian oil industry, as well as pioneered mechanical engineering equipment. While living in Stockholm, Sweden, Ross-Holmin knew many members of the Nobel family and began her research about ten years ago. She now conducts illustrated lectures about her work. She recently moved to Norfolk, Virginia.

FIFTIES

Clyde Fisher (B.S. 53) is executive director of the Lifetime Learning Center, a school for adults age fifty and older based in Seattle, Washington. He is a retired U.S. Army lieutenant colonel and retired assistant director of continuing education at Southern Illinois University-Edwardsville.

His brothers are also Geology alumni: **James Fisher** (A.B. 43 LAS,

M.S. 49, Ph.D. 53) is a retired geology professor in East Lansing, Michigan, and **Robert Fisher** (B.S. 53, M.S. 56) is editor of a geology newsletter in Denver, Colorado.

Denver-area scientist with the U.S. Geological Survey **Richard F. Mast** (B.S. 57, M.S. 60 ENG) received a Distinguished Service Award in May 1992 for his work in developing a major petroleum research program within the USGS and contributing to "increased national awareness and understanding of petroleum reserves growth, of resource potential in frontier and mature areas for both federal and private lands, and of the science of petroleum resource assessment."

Mast joined the USGS in 1972 after more than a decade of service with the Illinois State Geological Survey. He and his wife live in Wheat Ridge, Colorado.

SIXTIES

Bruce Mueller (M.S. 60) teaches earth science and astronomy at Auburn High School and owns two businesses, the GemShop in downtown Rockton and the C&M Rock Shop near Traverse City, Michigan. He was featured in an April 1992 article in the (Rockford) *North Suburban Herald*.

Valentine E. Zadnik (M.S. 58, Ph.D. 60) is the staff geologist for contracts and grants in the Office of Energy and Marine Geology, U.S. Geological Survey, Reston, Virginia. He received the Meritorious Service Award from the Secretary of the Interior at the September 1992 awards convocation in Washington, D.C.

Professor of geology at Potsdam State University College **Neal R. O'Brien** (M.S. 61, Ph.D. 63) received a two-year $19,975 research grant from the American Chemical Society Petroleum Research Fund to support his shale research. O'Brien has been a member of the Potsdam faculty since 1963. He and his wife, **Kathryn (Gronberg) O'Brien** (B.S. 58, M.S. 63) live in West Stockholm, New York.

Robert W. Luce (M.S. 62) joined the senior professional staff of the U.S. Nuclear Waste Technical Review Board in Arlington, Virginia. The board reviews the technical and scientific validity of the work being done by the Department of Energy to manage the nation's spent nuclear fuel and high-level defense nuclear waste.

Luce has been involved with research, field work, geological mapping, mineral exploration and hydrogeologic investigations with such organizations as the U.S. Geological Survey, Cripple Creek Mining and Development Corp. and Billiton Exploration USA. He lives in Reston, Virginia.

Daniel Textoris (Ph.D. 63) is a professor of geology at the University of North Carolina in Chapel Hill who teaches sedimentary petrology and conducts research on Newark basin evolution and reviews of geoscience programs in the United States and Saudi Arabia.

Textoris was at the GSA meeting in Cincinnati for only the last two days, he writes, but he did see a few Illinois graduates.

Alan G. Goodfield (M.S. 63, Ph.D. 65) is a geologist in the Foundations Unit of the Illinois Department of Transportation's Bridge Office in Springfield. He conducts foundation analyses of bridges and culverts on most state/federal routes and some county/city/township routes; slope stability analyses of slopes at structures; and settlement analyses and evaluations of potential geo-hazards such as mine subsidence.

Goodfield was active with the working committee in 1992 that developed the Professional Geologist Registration Act in Illinois, but it was eventually vetoed by Governor Jim Edgar.

Margaret S. Leinen (B.S. 69) was appointed vice provost for Marine Programs and dean of the Graduate School of Oceanography at the University of Rhode Island.

SEVENTIES

Professor at Florida State University in Tallahassee **Sherwood W. Wise Jr.** (M.S. 65, Ph.D. 70) was elected president-elect of the Society for Sedimentary Geology (SEPM).

Terry Wright (Ph.D. 70) is a professor of geology at Sonoma State University in Rohnert Park, California, teaching structure, field geology and introductory courses, including one on geologic violence and plate tectonics called "Earthquakes, Volcanos and Mountains." He recently returned to California after teaching at Wellesley College in 1991 and spending last year in northern New Hampshire on sabbatical.

James (Jim) Miller (M.S. 72) is chief operating officer and vice president of GeoEngineers, Inc., a consulting firm of one hundred fifty people based in Redmond, Washington, specializing in geotechnical engineering, engineering geology, hazardous waste assessment and remediation, and groundwater engineering.

A professor of geological sciences at The Ohio State University, **William I. Ausich** (B.S. 74) and his family recently returned from a five-month stay in Ireland, where he was working at Trinity College in Dublin on a Fulbright research fellowship. Ausich

studied lower Carboniferous crinoid systematics, taphonomy, paleoecology and stratigraphic distributions.

Debbie Bliefnick (B.S. 75) has moved to Trondheim, Norway, to work for a research company that works with oil companies there that are involved in North Sea exploration.

EIGHTIES

Polly Lee Knowlton Cockett (M.S. 80) and her husband, Robin, welcomed the birth of their daughter, Audrey Lane Knowlton Cockett, on April 16, 1992. They call her K.C. or Casey, and she has two older brothers. The family lives in Calgary, Alberta, where Robin teaches in the computer science department at the University of Calgary.

"Have met lots of geo-types in Calgary," she writes, "mostly unemployed. ..."

Alice Benkovich Shilhanek (B.S. 81) received her master's degree in geology last May from Western Washington University in Bellingham, Washington. She has done extensive field work in and around Puget Sound.

Bernard Lindsey (B.S. 83) is senior staff geologist for Converse Environmental West in San Diego, California. He supervises an operation and maintenance program for remediation equipment at various gasoline stations in southern California and is field geologist for subsurface investigations of potential and hazardous materials sites.

"I resigned my commission from the U.S. Navy during 1990 and was discharged in February 1991, with an adventurous trip to the Persian Gulf in between," Lindsey writes.

He and his wife enjoy camping in the Anza-Borrego Desert region east of South Dakota. He also volunteers at the new aquarium at Scripps Institute of Oceanography.

Mary Sue (Juricic) Miller (B.S. 86) is a technical service chemist for Henkel Corporation in La Grange. She does polyamide synthesis in a development lab.

"I noticed in the last newsletter that my roommate from summer field camp, Jean Schwartz Weiss, had her first baby the same day we did," Miller writes. "I married Jeff Miller in December 1989, and we had our first baby, Christopher, on April 13."

NINETIES

Rose Schmidt (M.S. 91) is working for the U.S. Army Corps of Engineers in Boston. She stopped by the Department for a visit on the way to her parents in Springfield for an early Thanksgiving dinner.

Robert H. Lander (Ph.D. 91), along with colleagues S. Bloch, S. Mehta and C.D. Atkinson of ARCO Oil and Gas Co. in Plano, Texas, received honorable mention from the Society for Sedimentary Geology for their paper, "Burial Diagenesis of Paleosols in the Giant Yacheng Gas Field, People's Republic of China." The paper was published in the *Journal of Sedimentary Petrology*, Volume 61, No. 2. Lander works at Exxon Production Research in Houston, Texas. His wife, **Linda M. Bonnell** (A.B. 73 LAS, M.S. 80 LAS, Ph.D. 90), is a research associate in the geology department at Rice University.

The Meinzer Award's Illinois connection

With the presentation of the 1992 O.E. Meinzer Award to Associate Professor **Craig M. Bethke** (Ph.D. 85), a little research revealed that between 1971 and 1992, numerous Illinois alumni and faculty have received the honor from the Hydrogeology Division of the Geological Society of America.

1971
Former faculty member **G.B. Maxey**, Hydrogeology of desert basins: *Ground Water*, v. 6, no. 5, p. 10-22, 1968.

1972
J.F. Poland and **G.H. Davis** (B.S. 42), Land subsidence due to withdrawl of fluids: *Geological Society of America, Reviews in Engineering Geology*, v. 2, p. 187-269, 1969.

1973
William Back (A.B. 48) and B.B. Hanshaw, Comparison of chemical hydrogeology of the Carbonate Peninsulas of Florida and Yucatan: *Journal of Hydrogeology*, v. 10, no. 4, p. 330-368, 1970.

1975
J.D. Bredehoeft (M.S. 57, Ph.D. 62) and **G.F. Pinder** (Ph.D. 68), Mass transport in flowing groundwater: *Water Resources Research*, v. 9, no. 1, p. 194-210, 1973.

1976
S.P. Neuman and **P.A. Witherspoon** (Ph.D. 57), Field determination of the hydraulic properties of leaky multiple aquifer systems: *Water Resources Research*, v. 8, no. 5, p. 1284-1298, 1972.

1979
J.M. Sharp Jr. (M.S. 74, Ph.D. 74) and former faculty member **P.A. Domenico**, Energy transport in thick sequences of compacting sediment: *Geological Society of America Bulletin*, v. 87, no. 3, p. 390-400, 1976.

1984
F.W. Schwartz (Ph.D. 72) and L.J. Smith, Mass transport, 1, A stochastic

analysis of macroscopic dispersion: *Water Resources Research*, v. 16, no. 2, p. 303-313, 1980; L.J. Smith and F.W. Schwartz, Mass transport, 2, Analysis of uncertainty in prediction: *Water Resources Research*, v. 17, no. 2, p. 351-369, 1981; L.J. Smith and F.W. Schwartz, Mass transport, 3, Role of hydraulic conductivity data in prediction: *Water Resources Research*, v. 17, no. 5, p. 1463-1479, 1981; D.H. Tang, F.W. Schwartz and L.J. Smtih, Stochastic modeling of mass transport in a random velocity field: *Water Resources Research*, v. 18, no. 2, p. 231-244, 1982; and F.W. Schwartz, L.J. Smith and A.S. Crowe, A stochastic analysis of macroscopic dispersion in fractured media: *Water Resources Research*, v. 19, no. 5, p. 1253-1265, 1983.

1985

D.S. MacFarlane, **J.A. Cherry** (Ph.D. 66), R.W. Gillham and E.A. Sudicky, Migration of contaminants in groundwater at a landfill: a case study, 1, Groundwater flow and plume delineation: *Journal of Hydrology*, v. 63, no. 1/2, p. 1-29, May 1983; J.A. Cherry, R.W. Gillham, E.G. Anderson and P.E. Johnson, Migration of contaminants in groundwater at a landfill: a case study, 2, Groundwater monitoring devices: *Journal of Hydrology*, v. 63, no. 1/2, p. 31-49, May 1983; B.C.E. Egboka, J.A. Cherry, R.N. Farvolden and E.O. Frind, Migration of contaminants in groundwater at a landfill: a case study, 3, Tritium as an indicator of dispersion and recharge: *Journal of Hydrology*, v. 63, no. 1/2, p. 51-80, May 1983; E.A. Sudicky, J.A. Cherry and E.O. Frind, Migration of contaminants in groundwater at a landfill: a case study, 4, A natural-gradient dispersion test: *Journal of Hydrology*, v. 63, no. 1/2, p. 81-108, May 1983; and R.V. Nicholson, J.A. Cherry and E.J. Reardon, Migration of contaminants in groundwater at a landfill: a case study, 6, Hydrogeochemistry: *Journal of Hydrology*, v. 63, no. 1/2, p. 136-176, May 1983.

1992

Faculty member **C.M. Bethke** (Ph.D. 85), Modeling subsurface flow in sedimentary basins: *Geologische Rundschau*, v. 78, no. 1, p. 129-154, 1989; and C.M. Bethke, W.J. Harrison, C. Upson and faculty member **S.P. Altaner** (Ph.D. 85), Supercomputer analysis of sedimentary basins: *Science*, v. 239, p. 261-267, 1988.

Please take a few moments to let us and your class mates know what you've been doing: promotions, publications, election to office, marriages, parenthood, moving, awards. We'd all like to hear from you!

Name_____ Response date_____

Home address_____ Office Address_____
(indicate if changed)

Home Phone_____ Office Phone_____

Degrees from Illinois (with year)_____ Degrees from other universities_____

Present employer and brief job description_____

Other news you would like to share_____

Your comments on the alumni newsletter _____

Place
Stamp
Here

Editor, *GeoSciences*
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Urbana, IL 61801-2999

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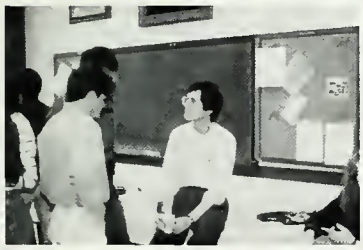
University of Illinois at Urbana-Champaign

GeoSciences

Department of Geology
Alumni Newsletter
Fall 1993

UNIVERSITY OF ILLINOIS



GeoSciences

Alumni Newsletter FALL 1993

Cover Photographs: Geology 311 class (plus Professor Stephen Marshak's son, David) taking in view of Devil's Lake, near Baraboo, during the annual fieldtrip to Wisconsin and Northern Michigan.

GeoSciences is the Alumni newsletter for the Department of Geology, University of Illinois at Urbana-Champaign. It is published in September and February of each year.

Staff: Department Head: Hilton W. Johnson; Asst. to the Head: Peter A. Michalove; Editor: Vanessa Faurie; Designer: Jessie Knox; Admin. Secretary: Patricia Lane.

Message from the Department Head

W. Hilton Johnson

Dear Alumni and Friends,

It is a real pleasure for me to have this opportunity to send greetings from the Department. Jim Kirkpatrick is taking a well-earned leave this year, and I am serving as Head. One of the more enjoyable parts of the job will be the contacts it brings with you through the newsletter and at national meetings. Details of the GSA alumni reception are given in the newsletter; please stop by for a visit with alumni and friends.

In news of the Department, George Klein has taken early retirement after serving on the faculty for 23 years. George reviewed his years here in a fitting colloquium last spring. He now serves as president of the New Jersey Marine Sciences Consortium. George will be at GSA, and I know many of you will want to wish him well in his new position.

The new school year has just begun here. Although these are challenging and in some ways, discouraging times in the Department, we are off to a positive start, and I sense a strong resolve by the faculty to come together and meet each challenge one by one. Enrollments in our several general education and service courses continue to attract more students, and enrollments in mineralogy and structural geology are above 20 for the first time since the large drop in enrollments in the mid-'80s.

The latest remodeling project is in full swing and should be finished by the end of the year. It was made possible in part by your generous contributions, as GeoThrust funds did double duty in helping match a grant from the National Science Foundation. Thanks to that support, we are remodeling nine rooms, providing more efficient and better lab space for research and learning.

Last year, Jim Kirkpatrick reported that both campus and college reviews were underway with respect to future reallocation of funds within the University. The College review, although positive in most respects, suggested an orderly reduction in the size of the Department. We have responded with a strong statement on the importance of the geosciences and our current faculty needs, as well as a long range plan to accommodate some size reduction. We believe it is a valid and realistic plan, and we will be strong advocates of it in further discussions with the higher administration. In the meantime we experience continued reductions in our operating budget at the same time we are teaching more students and have greater needs.

As you can gather from the above, the Department has needs. In these times of decreasing internal support, your gifts through GeoThrust are critical to the continued vitality of our educational and research programs. You will be contacted later with regard to this year's GeoThrust campaign. Gifts at all levels are important and will be greatly appreciated. However, some of our greatest needs, such as graduate fellowships and named professorships require substantial endowments, and I hope those of you who are in a position to consider a gift of this nature will do so. I would be pleased to discuss these and other giving opportunities with you.

Finally, I would like to extend an open invitation to you to visit the campus and Department when you are in the area. If you can't visit, I hope you will write to let us know of your recent activities and to share them with other alumni in the spring newsletter. I look forward to seeing many of you at GSA.

With warm regards,

Hilt Johnson

GeoNews

Sohl was a leading authority on Cretaceous gastropods and biostratigraphy and enjoyed a long career in science and science administration.

To the Editor

Thanks for the nice mention in the Spring 1993 issue of *GeoSciences*. This has jarred me into dropping a rare note off to Bob Dietz, featured in that issue.

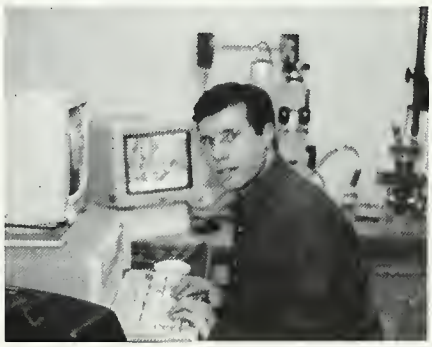
Bob, as a graduate student, was always a lot of fun and jokes. He helped my undergraduate thesis research by doing some X-ray studies of clays I recovered from Grand Tower ls horizons, an "insoluable residues" study of a big rock along the Mississippi River south of Chester, Ill.

I am enclosing a copy print made from an old Kodachrome slide by a U. of I. grad, **Robert F. Kennedy** '40. This was taken of a Professor Harold Wanless course field tour, "Geology of Illinois" in April 1941. The well was "Carter #2 Grimes," Hoodville Pool, Hamilton County, Ill. **Jack Simon** '41, M.S. '46, and **Karl Koenig** '41, M.S. '46, Ph.D. '49, are in the top row; I am in the lower right.

-- **Ed Bushman** '41
Laguna Beach, Calif.

Holdener receives best paper honor

A paper presented in March by graduate research assistant **Eric J. Holdener** at the North-Central section meeting of the Geological Society of America in Rolla, Mo., was selected by the awards committee to receive a Best Paper Award. The poster session paper was titled, "Assessment of Fenestrate Cryptostromes for Evolutionary Analysis: Reproducibility and Intracolonial Variation."

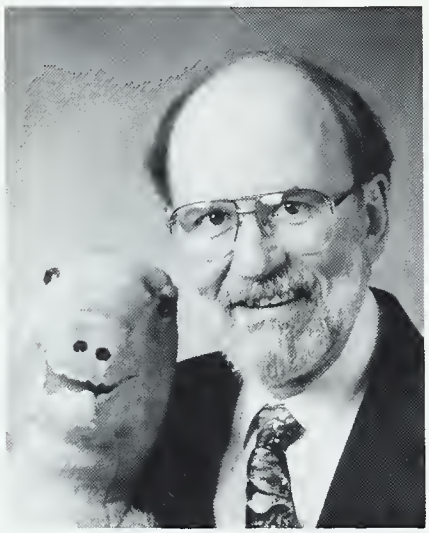


Eric Holdener

Sandberg receives honors for teaching, innovation

Professor **Philip Sandberg** was chosen by his students and colleagues last spring to receive a William F. Prokasy Award for Excellence in Undergraduate Teaching in the College of Liberal Arts and Sciences.

Sandberg was one of four professors honored with the award. Other recipients were Stephanie Alexander, mathematics; Larry Danielson, English; and William Martin, sociology.



Philip Sandberg and Snyder

The award is named in honor of the former dean who founded the award to promote exceptional achievement in undergraduate teaching. Recipients each receive $1,000, an annual salary base increment of $3,500 and a plaque.

Sandberg also received an Amoco Foundation Award for Innovation in Instruction, which comes with $1,750 cash. The award honors faculty members who have made particularly successful innovations in instruction through funding provided by the Undergraduate Instructional Award, IBM Innovations or Apple Seedlings grant programs.

Alumni cycle in the Netherlands

Seymour "Sy" Jaye '54, M.S. '55, of Boulder, Colo., (at left) and John D. Shafer '54 of Olney, Ill., (right foreground) met on an Elderhostel/International Bicycle Tour in the Netherlands in June. The men were joined by their wives and Louise Turpin of Champaign (in background).

Sohl memorial fund established for paleontology research

Norman F. Sohl

A fund to support graduate field work in paleontology was established in the Department in memory of **Norman F. Sohl** '49, M.S. '51, Ph.D. '54, who died April 14, 1993, at the age of 68.

Sohl was a leading authority on Cretaceous gastropods and biostratigraphy and enjoyed a long career in science and science administration.

The decorated World War II veteran who participated in the D-Day invasion taught at Illinois and Bryn Mawr College before moving to Oakton, Va., and joining the U.S. Geological Survey. He was chief of the Branch of Paleontology and Stratigraphy from 1968-73 and member and chair of the Geologic Names Com-

mittee from 1968-81. He received the two highest awards of the U.S. Department of the Interior, the Meritorious and Distinguished Service Awards.

His professional associations included serving as president of the Institute of Malacology (1970-74), treasurer of the International Paleontological Union (1968) and president of the Paleontological Society (1985-86). In 1991 he received the Paleontological Society Medal.

Sohl also had been an adjunct professor at George Washington University and a visiting professor at the University of Kansas.

He is survived by his wife, Dorothy, and son, Norman Jr.

Memorial contributions may be made to the University of Illinois Foundation, The Sohl Graduate Research Fund in Paleontology and sent to Peter Michalove, Dept. of Geology, University of Illinois, Urbana, IL 61801.

Students garner Department awards

A number of awards were presented to students by the Department at a ceremony in March.

At left: State awardees Debbie VanderLinden, Todd Cole, Amy Berger, David Voorhees, Theresa Beckman, Robert Ylagan and Christie Demosthenous. Top: Department Head Jim Kirkpatrick, Robert Ylagan and David Voorhees. Second from top: Professor Alberto Nieto, graduate student Todd Cole and Kirkpatrick.

Robert Ylangan (spring 1992) and **David Voorhees** (fall 1992) each received the Outstanding Teaching Assistant Award. This award is financed from funds donated in memory of the late Professor George White, Department Head from 1947 to 1965.

Todd Cole received a Brunton compass for field work as part of the Geology Alumni Senior Award, selected by the Department's Undergraduate Study Committee.

Top left: Theresa Beckman, Christy Demosthenous and Professor Emeritus Donald Henderson. Middle left: Jim Kirkpatrick and Amy Berger. Bottom left: Debbie VanderLinden and Jim Kirkpatrick. Above: Postdoc Ming Kuo Lee.

Theresa Beckman and **Christie Demosthenous** received Alumni Fellowships, which are funded through GeoThrust donations.

Amy Berger was the recipient of the Outstanding Woman Graduate Student Award. And **Debbie VanderLinden** received a pick for field work as part of the Estwing Award, sponsored by the Estwing Manufacturing Co.

Honn Kao was honored with a University Fellowship, which is awarded by the University to a student in the Department as recommended by the Graduate Study Committee.

Langenheim discusses situation in Albania

Professor Emeritus **Ralph L. Langenheim** presented a talk on the present economic and political conditions of Albania to the Peoria Area World Affairs Council on June 17.

He spent September and early October 1992 in Albania on an IESc mission to advise the Polytechnic University of Albania in regard to the curriculum and organization of the geology and mining faculty. He also attended a working conference of the IUGS Ophiolite Study Group, which took him into the field in northern Albania. This and additional travel along the coast to the south gave him a crash course on a nation in transition from communism and dictatorship to free enterprise and democracy--an exciting time. The trip also served to illuminate some of the Balkan problems and opened thought to ways in which to handle the situation. The latter attracted the Foreign Affairs Council.

IGS field trip sites have strong link to Department

C.J.Mann, R.L. Langenheim, Pius Weibel and **Brian Huff** led an Illinois Geological Society field trip, Silurian Reefs and Stratigraphy--The Kentland Disturbance, on April 16 and 17.

The group visited the Delphi Quarry, Rich Valley, the Wabash Reef, Hanging Rock, the Engineering Materials Quarry at Logansport, Ind., and the Kentland Astrobleme. All of these are classic localities, and many of them have strong associations with the Department. Professor Emeritus A.V. Carozzi's group, for example, intensively studied the carbonate petrography of Hanging Rock, the Wabash Reef, Rich Valley and the Delphi Quarry, and were responsible for working out the sequence of events in which the biogerms became established and eventually grew to atoll-type reefs.

Linda Sindelar Tollefson contributed definitive work on the transition from the Kokomo algal mat environment to the calcilutites of the Kenneth Formation. Finally, **Ray Gutschick** has conducted continuing studies at Kentland for more than 30 years as the infinitely complex structure has been progressively brought to light by quarry operations.

A new guidebook for these localities has been made available.

The U. of I. Geology Department
invites you to an
ALUMNI RECEPTION
at the Geological Society of America meeting in Boston
October 25
7-9:30 p.m.
in the White Hill Room of the Park Plaza Hotel

Hope to see you there.

Share the memories

Do you remember a funny or touching moment from one of your field trips?

Send us a memorable anecdote about a field trip you went on during your time in the Geology Department.
What happened? When was it? What faculty members were along? If we get some interesting responses, we'll share them with fellow GeoSciences readers in a future issue. If you have any good photos, send those too. We'll return them.

Send your (legible) remembrance along with your name, address and daytime phone number to:

Field Trips
c/o GeoSciences Editor
Department of Geology
245 Natural History Building
1301 W. Green Street
Urbana, IL 61801

Alumni
Profile:

Haydn H. Murray

'I have always felt the training that you get sort of paves the way for your future. Illinois was a very good training ground for me.'

Career runs gamut from academe to industry

World War II played a particularly important role in determining the course of **Haydn H. Murray**'s life. Because of the war, he became interested in geology and received three degrees from the University of Illinois (B.S. '48, M.S. '50 and Ph.D. '51). And from then on, he has always managed to be in the right place at the right time throughout his illustrious professional life.

Haydn H. Murray

Born and raised on a farm near Toulon, Ill., Murray thought about his future and decided he wanted to become a doctor or an engineer.

"Rocks always fascinated me, for some reason," he said. "And I concluded that becoming a doctor would take too long. So I went into mining engineering."

But it was the University of Minnesota, not Illinois' land grant school, that Murray attended in 1942. He was in the middle of his third quarter at Minnesota when his military duty took precedence in his life. When he was undergoing officer training, he was told he would remain in the United States for at least six months before going overseas. That prompted him to call his high school sweetheart, Juanita Appenheimer, and the two were married in December while Murray was on a 10-day leave. However, he was soon sent out to Fort Lewis, Wash., and informed of his pending overseas duty.

"So I called my new bride, and it took her about four or five days to get a space on the train from Chicago to Seattle," Murray said. "She came out and we had another 10-day leave. We drove down to San Francisco, and then I left and didn't see her for a couple of years."

Murray served as a lieutenant in an aviation engineering battalion in the Philippines. His work involved raw materials to build roads, bridges and airstrips. Using volcanic ash and seeing several active volcanoes in the area, he became more interested in geology and decided that was what he wanted to do.

But it was a long wait. Although the war ended in August 1945, Murray was the last officer of his battalion to come home. He did not get out of the service until September 1946, and classes at the University of Minnesota had begun in August.

"I was so anxious to go to school that I decided to come down to Urbana and enroll because Illinois didn't start until late September that year," Murray said. "Of course, it turned out to be a very lucky move.

"Then I had no intention of going all the way, but I got a teaching assistantship after I graduated in '48. And then I got the Illinois Clay Products Fellowship to go on for the Ph.D. So I stayed and got all three degrees from Illinois."

Murray received the Hal Williams Hardinge Award in 1976.

Professor Ralph Grim's teachings had a tremendous influence on Murray's professional development.

"He was always a gentleman, one of the nicest people I ever met," Murray said of his mentor. "I remember when I gave the first paper that I ever gave before an actual meeting, and I was scared to death. He said, 'Don't worry. Just remember, you know more about that subject than anyone else in that audience.' And I've always thought, well, you really do know your subject, or should know it, better than anybody. And that always stayed with me. I tell my students that, too."

As it turned out, Professor Grim was good friends with the state geologist at Indiana University, and when the job opened, it required a clay mineralogist. "I knew I was going to get that job a year before I was finished," Murray remarked.

Having always enjoyed teaching, he remained at Indiana for six years. Then an unexpected offer came up that was hard to refuse.

"When oil company representatives would come through, it always boggled me when they said professors had their heads in the clouds, in an ivory tower and that they weren't practical. So the president of the company I was doing some consulting work for offered me double my salary at Indiana. So I decided I would try industry."

In 1957, Murray moved to New Jersey and the Georgia Kaolin Co. for the next 16 years. He started out as director of research, eventually making his way to executive vice president in which he was responsible for all aspects of the company, including research and development of resources.

"When I went with them, the company was the third largest in that field of kaolin production," he said, describing his biggest accomplishment with GKC, "and when I left, they were No. 1 in production and new product developments. So taking the company and seeing it develop and hiring the research staff and watching the development of new products was probably the most exciting thing."

The owner of the company died in 1973 and the business was sold. But instead of being out of a job, Murray's timing for new employment was still sharp. "I've been in the right place at the right time so many times that luck has been on my side," he said. In April, Murray was asked to return to Indiana to head the geology department.

"You know, since returning to teaching, my feeling is that everybody should have industrial experience.

The learning experience, the practical applications, the people relationships are very, very important. I returned a much better teacher and administrator than I would have been without the industrial experience."

Murray's goals for the department were to heighten its stature and broaden its base in all areas of geology, all the while continuing his teaching and research. In the 11 years he held the administrative post, eight new positions were added, making it one of the largest departments in the Big 10 today.

Another time-consuming part of being chair, but one Murray believed was essential to attracting good people, was to participate in various professional societies and organizations.

'The learning experience, the practical applications, the people relationships are very, very important. I returned a much better teacher and administrator than I would have been without the industrial experience.'

Over the years he has held leading positions with such groups as the Clay Minerals Society; the Society for Mining, Metallurgy and Exploration; the American Institution of Professional Geologists; the American Geological Institute; and the Geological Society of America.

In 1976, Murray was pleasantly surprised to receive the Hal Williams Hardinge Award from the American Institute of Mining, Metallurgy and Petroleum Engineers in recognition of outstanding achievement in the field of industrial minerals.

He also has been involved in various international assignments. From 1974-82 he was chairman of a UNESCO working committee on kaolin genesis and age correlation, and in 1988 he conducted a survey of Chile's industrial mineral potential at the request of its government. Murray also worked as a consultant for the National Research Council's Office of International Affairs to evaluate bentonite clays and kaolins for AID projects in Egypt. One of these projects resulted in the discovery of a large sodium montmorillonite deposit between Cairo and Alexandria, establishing a new industry to produce drilling muds and foundry clays for Egypt and other countries in the Middle East.

During these hectic years, time management was one thing Murray learned from his industrial experience that was invaluable.

"My wife would say that I was never home in the evenings," Murray said and laughed. "I'd come home for dinner and then go back to the office. A lot of my writing and research were done between eight and midnight.

"I never really did like the administration," he added. "I think the teaching and supervision of graduate students is the most rewarding--to see them develop and go into their professions and watch them mature and become successful. I think I have former graduate students in every major clay company in the country."

In 1984, Murray opted not to be reappointed department chair. He has continued teaching and doing research. And, since that time, he has served as the faculty athletics representative to the NCAA and the Big Ten. "It takes a lot of time, but I enjoy it," he said. "I love athletics." (He still roots for Illinois teams when they play anyone but Indiana.)

Sports is not the only connection Murray maintains with Illinois. He has been active with the GeoThrust Committee of the U. of I. Geology Department since its inception and currently serves as chairman.

"I have always felt, and I tell other people this, the training that you get sort of paves the way for your future," he said. "Illinois was a very good training ground for me. Professor Grim was outstanding, and other professors also. They sort of mold the way that you perform and act. So I always felt that I owed the University a lot and have tried to give back."

'I think the teaching and supervision of graduate students is the most rewarding--to see them develop and go into their professions and watch them mature and become successful.'

Murray plans to teach one more year and then retire. But he said he will still have graduate students finishing up their work. And he'll continue his research with emeritus status. And then there's the new position he just acquired recently when he was elected president at the International Clay Minerals Society meeting in Australia.

There is a sneaking suspicion that, retired or not, Haydn Murray will remain as busy as ever.

Faculty
Profile:

Stephen Marshak

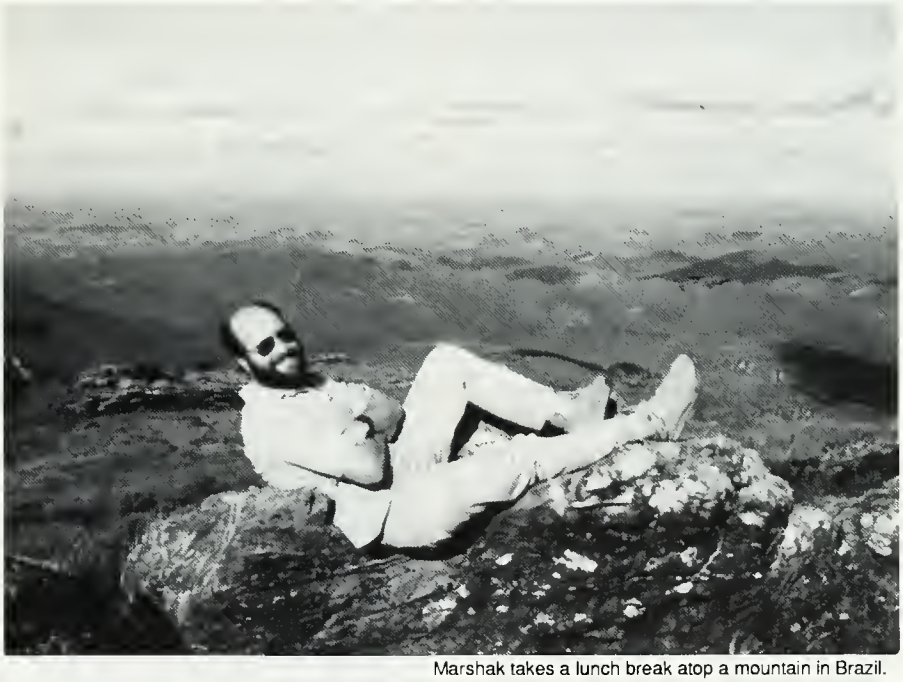
'There are 37,000 students at this university," Marshak said, "and if we're only teaching 100 of them a year, we are not serving the best interest of science education or of geology.'

Field geology still at the heart of his work

Professor **Steve Marshak** may look like a mild-mannered structural geologist, but he's really a master juggler. He can conduct field studies in Brazil, develop an introductory geology course, teach a core undergraduate course, lead a field camp in Utah, supervise a group of graduate students, or just kick back at home and write a textbook.

Perhaps the reason why he does so much is because he simply enjoys it all. From an early desire to understand the mountains he backpacked through in high school, Marshak always liked structural geology and field work in the great outdoors.

"It's much more pleasant to be out under the open sky than in an office," he said.



Marshak takes a lunch break atop a mountain in Brazil.

Hailing from Rochester, N.Y., Marshak started out at Cornell for his undergraduate work, then moved to the University of Arizona for his master's because "there are lots of rocks and lots of mountains there." But he returned to the East when he went to Columbia University for his Ph.D.

While at Columbia, Marshak managed to participate in exotic field expeditions to Tunisia, Italy, Antarctica and Chile. Strangely enough, his own thesis focused on the Hudson Valley in New York State.

When he's asked about these outings, it's easy for a travel story or two to come to mind.

For example, imagine the Antarctic in 1979. Marshak was driving a skidoo pulling a supply-laden sledge. While going down an ice fall, a Russian named Vladimir who was riding on the sledge yelled to Marshak, "Giddyap! Giddyap!" (that's what he'd heard American movie cowboys tell their horses). But Marshak was already going full throttle, and when the sledge started going faster than the skidoo, they soon reached the end of their rope, literally. The sledge flipped over and the two went flying. Fortunately, they were not hurt and

Graduate students on a recent field trip to southwest Arizona studied extensional tectonism.

had started to right the equipment when a colleague on another skidoo yelled for them to move quickly. It seemed they had landed on a snow bridge that spanned a 10 meter-wide crevice.

Later, safely at camp, they relearned some more laws of nature when they discovered that the wine bottles they had lugged along had frozen and cracked. Fortunately, the beer was fine, since the cans had expanded. So at the end of that particularly long day, they threw a few cans into boiling water until they melted enough to be consumed.

The field work Marshak now conducts concentrates on a portion of the Brazilian craton. For the last six years, he has taught a three-week short course on geotectonics at a university in Brazil. He naturally became interested in the geology of the area and began to collaborate with a professor there. With a National Science Foundation grant secured, the two are studying the Precambrian origin and evolution of this craton. Some of the initial results of this work led to publication of a Nature article last year on granite-greenstone belt architecture.

In addition to his Brazil project, Marshak also is working on the three-dimensional geometry of structures in fold-thrust belts and on the nature of tectonic movements in continental interiors.

"There is growing evidence that stresses created during orogenic events at continental margins are transmitted into the interior of the continent," Marshak said. "Traditionally, people viewed continent-continent collisions to be somewhat like a collision between two Volvos, where the (impact) is all in the front area and the back end is just fine. But more likely, it's like a collision between two Yugos, where the whole thing gets deformed--obviously more in the front but some deformation toward the rear."

The ability to explain something so complex with an easy-to-grasp analogy like two totaled Yugos is one of the reasons why Marshak has had successes inside the classroom, as well.

"I thoroughly enjoy teaching," he said. "It's a challenge to find ways to explain complicated material to students."

Marshak teaches two graduate courses, as well as undergraduate structural geology and a revamped introductory course, Geology 100. In the latter course, he has tried to appeal to a larger number of students without sacrificing scientific content.

A visit to Zabargad Island in the Red Sea near the Egypt-Sudan border.

In the last few years, course enrollment has essentially quintupled.

"We use quite a bit of audio-visual material to spice up the course," he said. "It's sort of a multi-media approach to geology."

The increasing enrollments in Geology are important.

"There are 37,000 students at this university," Marshak said, "and if we're only teaching 100 of them a year, we are not serving the best interest of science education or of geology. We should try to attract a bigger audience and reach a larger percentage of students so that when they get out of here, they're literate in concepts about how the Earth works. Those are the people who are going to have to make decisions about natural hazards and resource utilization."

Marshak wades to a field area in Brazil.

Although, Marshak admits it can be frustrating to try and teach students who don't begin the course with a real interest in geology, he finds that the frustration is offset when the students surprise themselves and realize that they actually end up enjoying the course.

"You can't teach to the lowest common denominator," he said. "But at the same time, you don't want to teach beyond the reach of the majority."

Marshak is currently working with Professor Philip Sandberg on an introductory textbook that incorporates their shared philosophy about how to interest undergraduates. Marshak explained that geology education underwent a fundamental revolution in the early 1970s when plate tectonics made its way into the introductory curriculum. Now, he said, it is time for a change in the way things are done.

With his combination of teaching and research, Marshak's schedule is often bulging at the seams. Class field trips, the Utah field camp, meetings, and research expeditions conspire to keep him away from home. Often, the external demands force the more important goals to a lower spot on the priority list.

'There is growing evidence that stresses created during orogenic events at continental margins are transmitted into the interior of the continent.'

"A lot of times you have many short-term tasks that require an immediate response, which means the long-term projects often get put aside. It's a frustration."

But sometimes Marshak can combine his work with other priorities. For example, Marshak took his family to Australia last year while he was on a sabbatical there, and his 8-year-old son David loves going on the structure trip to Marquette, Mich.

"The funny thing about it is that he's heard me repeat things so many times that he knows the geology better than some students."

On a recent trip, and as he usually does, Marshak had his students measure structure features of rocks with a compass. There is a noticeable change in the orientation of structures from where they begin the day to where they finish. When Marshak asked this group how the last measurement compared to the first, the students were silent. David, who was 6 at the time, said, "Wasn't the other one north 80 east?"

"All the students stared at him because it was the right answer," Marshak said.

So as the new academic year gets underway, Marshak continues his efforts to spend time with his family, which also includes his 4-year-old daughter Emma and his wife Kathy. Reminders of the kids are proudly displayed on his office wall in the form of their original artworks. Marshak also is proud of the work his past graduate students--his extended family--have gone on to accomplish, and this year he is supervising five new graduate students.

When he does get some free time to himself, he writes. Along with the text he is working on with Sandberg, Marshak is co-authoring a structure and tectonics textbook. After teaching a course for a number of years, it seems like a natural step for him to put what he's learned from teaching down on paper for others to share. His first book on structure and tectonics was published in 1988 and is now in its sixth printing.

"What I do for relaxation in the evenings is basically write textbooks--I find it more interesting than collecting stamps," he said and laughed.

Student
Profile:

Amy Berger

'I'm not the type of person who can stand up in the front of the room and tell jokes. I try to organize my lectures so that there is a lot of class participation.'

Getting a Ph.D. in hydrogeology is no waltz

She reads Elizabethan history, makes quilts, loves Winnie the Pooh and trips the light fantastic with a ballroom dancing club. Oh, she also is a hydrogeologist working on her Ph.D. under Professor Craig Bethke's supervision.

"The dancing geologist," **Amy Berger** called herself and laughed. "Dancing was my thing to do when I was growing up. It's kind of an escape for me. I absolutely forget anything I'm worried about."

Lately, there was plenty she worried about. On May 10 she went through her qualifiers--"one of the top five worst experiences" of her life. From the end of March until that day, her whole life was focused on that goal, and to her, May 11 didn't exist.

"It was that absorbing and terrifying," she said. "It's like, 'Let's throw you into a pit of burning coals and see if you can climb out.'"

Berger did climb out and passed, much to her relief. She even treated herself to a shopping spree as a reward for all the hard work. She bought running shoes, biking shorts and material for a new quilt.

Amy Berger

But that wasn't the only reward she has received recently. In August, she was officially notified of her appointment to the Department of Energy's Office of Environmental Restoration & Waste Management Graduate Fellowship program. The 12-month appointment includes a summer practicum in 1994 at a DoE lab or facility.

In 1993, Berger received the Department's Outstanding Woman Graduate Student Award, and in 1992 she received the Alumni Fellowship. It's hard to believe when this accomplished student says she "fell into geology by accident."

She went to Pomona College in California for her undergraduate work, which began as a double major of chemistry and history. That decision was inspired by some special high school teachers who passed along their excitement for their subjects to Berger.

"I tend to be a very teacher-oriented learner," she said. "But I took chemistry my first year at Pomona and got murdered, basically."

She also discovered that she really didn't like studying history, either. So she began to sample various courses, including physics and math, which she attributes to the influence of her mathematician father. Another of those sample courses was a geology class for non-majors because the professor came highly recommended. Most geology majors didn't come from that class, but Berger did. And the geology department was small enough that the people all knew each other and Berger could take every course. During her junior year, she was a geology liaison to en-

courage more majors into the department.

"I didn't know what I was interested in except that I thought I was interested in sedimentary geology," she said.

After college, Berger considered law school and going into environmental law. But when that avenue seemed a bit much for her, she thought about environmental consulting. She looked around for a hydro program and visited three schools, including Illinois.

"That was an eye-opener," she said. "As an undergrad, the schools are trying you out. When I applied for graduate school, it was completely reversed. Everybody wants you. Purdue and Illinois offered fellowships.

The people she met at UIUC were of various ages and seemed to be doing projects that sounded interesting to Berger. "At Purdue, it was more like professor to student," she said, "whereas here it was more like researcher to researcher."

Her work with Bethke took her to Denver, Colo., in April to participate in a short course called "Environmental Geochemistry of Mineral Deposits," regarding environmental damage from hard-rock mining and acid mine drainage. The variety of directions to explore intrigued Berger, and she decided to write her thesis proposal on acid mine drainage.

Other work with Bethke includes preparing an annual three-day course for labs that fund his research. Bethke's students teach participants how to use the group's software, so the graduate students have been writing labs and working out the bugs. One program, for example, dumps out a data file and another one plots the information into corresponding color images.

"Craig is really good to work with," Berger said. "He's involved in so many things, and he knows an incredible amount. And he seems to be really well respected by hydrology and geology people.

"He does such a wide range of things that I have a lot to choose from. He doesn't say, 'This is your project.' He throws a lot of things your way, and he's open to a lot of ideas."

What truly impresses Berger about good teachers is when they are excited about what they do and "attack" a subject in a way that involves the class, rather than just standing up and talking. Being a teaching assistant herself has really put those beliefs into perspective, she said.

"I'm not the type of person who can stand up in front of the room and tell jokes," Berger said. "I try to organize my lectures so that there is a lot of class participation. It was really hard at first; a bombed a couple of times. But I started teaching and thought, 'This is really fun.'"

She passes that fun along by rewarding exceptional papers with gold star stickers. She especially takes delight in seeing typically stoic engineering students checking each others' papers to see who got a star. Ultimately, Berger's professional goal is to teach at a small college like Pomona where she can have more of a personal, one-on-one interaction with students.

But first she has to get through another May again. In 1994, it will be the prelims, and all the studying and fretting that goes them. "May is just not a good month," she joked. "But for now I can go home at five and I don't have to come back in at seven."

Alumni News

GeoSciences *is for alumni and largely about alumni. Please take the time to complete and return the information form you will find at the end of this issue. Just as you like to read about classmates and other alumni, they'd like to know more about you. Your news is important to them and to us in the Department. Send a recent photo along, too, but let us know if you want it returned.*

The following notes are divided by decade. Those who were affiliated with the Department during part of one decade through to the next are listed according to the last degree received. Within each decade, items are listed in yearly sequence, not alphabetically.

FORTIES

Charles Noble Beard (Ph.D. 41), a retired geology professor at Fresno (Calif.) State University, died at the age of 86. He was department chairman at FSU from 1966-69. He retired in 1970 after 33 years there. Beard did research with the U.S. Army Corps of Engineers in Arizona and was a field geologist for groundwater survey in Tennessee. He was a fellow of the Geological Society of America. Beard is survived by his wife, Mary, a son and two grandchildren.

Harold White (B.S. 47, M.S. 48), president and CEO of White Exploration, Ltd., has closed out his corporation and retired in December 1992. He lives in Jackson, Miss.

Jack A. Glendening (B.A. 48) is retired and lives in Big Cabin, Okla.

Robert N. Ginsburg (B.S. 48), professor of marine geology and geophysics at the University of Miami, received a Fulbright Award for study abroad in Morocco.

FIFTIES

Wilford F. Weeks (B.S. 51, M.A. 53) moved to Fairbanks, Alaska, in 1986. He is a professor of geophysics at the Geophysical Institute at the University of Alaska-Fairbanks and retired in 1989 as chief scientist at the Alaska Synthetic Aperture Radar (SAR) Facility (which makes radar images of the earth from space). At UA, Weeks "teaches a grad course on sea ice, supervises grad students, worries over the science program at the SAR facility, does field work in bizarre places most of which you would not want to visit, and writes the usual sleep-inducing technical papers."

In 1987 and '88, he ran field studies near the North Pole, has worked at Barrow every winter from 1988 to the present, and was in the Antarctic in 1990. Another Antarctic trip was planned for August bound for the Southern Ocean.

He and Marilyn plan to leave Alaska in 1996 and move to Portland, Ore.

Charles E. Tranter (M.S. 54) retired in December from Mobil Oil Co. after nearly 39 years. He had been chief geologist since March 1987.

Carl G. Davis (B.S. 59) of Westville teaches geology, physical science and chemistry at Danville Area Community College. He received a one-semester leave last fall to write *The Geology of Vermilion County and Nearby Geologic Sites*.

"My main sources of information were the Illinois State Geological Survey, the Indiana Geological Survey and the Illinois State Water Survey. All of these agencies went out of their way to help me in this project. I want especially to thank Drs. Hilton Johnson and John Kempton for their help in the glacial and groundwater areas. The U. of I. Geology Library also gave me a courtesy card and this library was a very useful resource.

"The book was written for the purpose of bringing together the many items concerning this country's geology, especially in the area of economic resources.

"I did some field work east of Westville in the Grape Creek area in glacial deposits. Several of these sites were described in Eveland's 1952 paper on the geology of the Danville area. I also looked for the 'lost fossil beds' along the Vermilion River first reported by Worthen, 1882, without any luck. I am still puzzled by many aspects of the Grape Creek area; the depression called Langley Bottoms and its relationship with the buried Danville Valley, a tributary of the Teays River system. Writing the book was a very enjoyable experience."

SIXTIES

Charles E. Pflum (B.S. 60) retired from the Exxon Production Research

Co. in August 1992 after 29 years of service. He and his wife, Betty, moved to Kerrville, Texas, in the "heart of the hill country to enjoy a little slower pace of life."

Paul L. Plusquellec (M.S. 66, Ph.D. 68) is vice president of operations with CNG Producing Co., supervising inland and offshore development and all field operations for production. He lives in Gretna, La.

SEVENTIES

Steven W. Leavitt (B.S. 71) has been an associate professor at the Laboratory of Tree-Ring Research in Tucson, Ariz., since 1990 and is acting director for the 1992-93 academic year. From 1984-90 he was an assistant and then associate professor of geology at the University of Wisconsin-Parkside. He planned to return to China this summer for field work in the Qinling Mountains as part of a project to reconstruct monsoonal circulation over the past 400-600 years.

Cmdr. **Steve Jamrisko** (B.S. 71) retired from the U.S. Navy in July after 20 years of service. He plans to remain in Washington, D.C., and hopes to find a place in environmental work.

H.R. (Dick) Naslund (B.S. 72), chair and associate professor of geological studies and environmental studies at the State University of New York at Binghamton. His current research is on Skaergaard intrusion, Palisades sill and an ocean drilling program. He and his family live in Vestal, N.Y.

Thomas P.L. Dowell Jr. (M.S. 72, Ph.D. 73) is retired. He writes that he now has a sailboat and will enjoy sailing the Gulf Coast of northwest Florida. He also gives presentations on "Energy and the Environment" to Florida State University's Senior Connection, Academy for Resourceful Retirement in the Center for Professional Development and Public Service. He hopes to introduce older voters to the need for geologic advice on land use decisions and perhaps the need for "city geologists."

He also says he was "delighted to see the Department developing an environmental program"--something he advocated in the early 1970s.

Bill Rice (M.S. 74) has been elected vice president of the Kingsford, Mich., School Board.

Jim Brossman (B.S. 74) joined Amoco Oil Co. in 1990 as an environmental coordinator for hazardous waste. Before that, he worked for the Environmental Protection Agency and ENSR Consulting and Engineering. He and his wife, Nancy, celebrated their 20th anniversary in Hawaii last year. And this year, they took their kids--Eric (14), Michael (10) and Alex (6)--to Colorado, Wyoming and South Dakota. "Our drive through the Sheridan area brought back many memories of 'Camp Ralphie,'" he writes.

Jerry P. Walker (M.S. 75) is chief geologist at Sierra Energy Corp. in Reno, Nev. He is president of the Nevada Petroleum Exploration Society. Walker also serves on the Citizens Advisory Committee of the Reno School Board and sits on the committee that evaluates and selects science textbooks to be used in the school system.

James W. Castle (Ph.D. 78) received the 1992 A.I. Leverson Award from the eastern section of the AAPG during the fall 1992 meeting in Champaign. The award is given to the individual who presents the most outstanding paper at the section's annual meeting. While at the U. of I., Castle was supervised by Professor George D. Klein.

Caner Zanbak (Ph.D. 78) has formed his own environmental and mining consulting company, EMCZ Inc., in Streamwood, Ill.

Bradley Krumpolz (B.S. 78) teaches physical science and earth science at Downers Grove South High School. He taught earth science for one year at Niles North High School and earth science, physical science, physics and chemistry for three years at North Chicago High. He lives in Mount Prospect, Ill.

John Morrone (B.S. 79) is a district geologist for the U.S. Department of I-BLM in Crory, Colo. He works with coal, sodium minerals, oil shale and the saleable minerals programs, which consists of coal corelations, mapping and resource valuation, detail mapping of small tracts and mine claims for mineral value. He is "happily living" in a self-built log home in Steamboat Springs and "recreating (skiing, hiking, camping, cycling, mountain biking, etc.) whenever possible." He welcomes old classmates and faculty to visit when they are in the area.

EIGHTIES

Richard Leary (Ph.D. 80) curator of geology at the Illinois State Museum, will be an invited lecturer on board Orient Lines cruise ship Marco Polo in January 1994. The 15-day cruise begins in Buenos Aires, Argentina, Jan. 12, visits the Malvinas/Falkland Islands, makes several stops along the Antarctic Peninsula and ends in Punta Arenas, Chile, Jan. 27. Leary also will lecture on regional geology and paleobotany and share his experiences in Patagonia (1991) and western Argentina (1986). He and his wife, Eleanor, reside at 837 Roanoke Dr., Springfield, IL 62702.

Michael R. Owen (M.S. 80, Ph.D. 84) from St. Lawrence University in Canton, N.Y., was elected president of the Society for Luminescent Microscopy and Spectroscopy.

Marilynn (Nicholson) Schwanitz (B.S. 78 Plant Biology, A.B. 81) is a science teacher who has various special assignments in several

science departments in the Anchorage (Alaska) School District. She worked and lived in Midland, Texas, for five years after graduation where she was a development geologist for what is now Chevron. Her husband, Brian, is an engineer. They have two children, Erin (9) and Christopher (7).

Schwanitz recently completed her teaching certification and says they have "wonderful geology programs" in the high school and junior high in Acnchorage. "Alaska is phenomenal--a geomorphologist's dream. My kids have a great rock collection gathered from the many hikes around Anchorage bowl."

Becky Birch (B.S. 81) and her family have moved to the Melbourne area from the Sydney area in Australia.

Alice Benkovich-Shilhanek (B.S. 81) of Bellington, Wash., gave birth to a son, Karl, on Oct. 7, 1992. She completed her master's degree in geology at Western Washington University in April 1992. Although she is occupied at home at the present, she would like to find part-time work with a geotechnical firm or other geological work within a year.

Grant Olson (B.S. 81, B.S. 85 Vet. Med., D.V.M. 87) is a small-animal veterinarian at Door Animal Hospital in Sturgeon Bay, Wis. He says he hopes to get back to a mixed practice eventually.

Chuck Connor (B.S. 82) worked on Mexican volcanoes after he received his Ph.D. from Dartmouth in 1988. Then he went to Florida International University, where he worked for five years as an assistant professor studying Latin American volcanoes. He received tenure last year, but then quit to go to Southwest Research, a non-profit research consortium.

"At Southwest, my bread-and-butter is assessing volcanic risk at the proposed high-level nuclear waste repository at Yucca Mountain for the U.S. Nuclear Regulatory Commission," he writes. "I still work a lot with volcano observations in Colombia, Nicaragua and Mexico, learning better ways to monitor volcano degassing and heat transfer. I got very lucky last January when I was too sick to visit the crater of Galeras volcano, Colombia, the day of a serious eruption. Bueno Suerte! Laura and my three kids, Michael, Matthew and Jennifer, where glad to get me home that time!"

David Bieler (Ph.D. 83) was promoted to associate professor of geology and granted tenure in the fall of 1992 at Centenary College in Shreveport, La. He keeps busy teaching structure, metamorphic and field methods, plus the introductory courses. He also teaches hydro occasionally, saying "I'm the only one comfortable with numbers." He still does field studies in Alabama and Arkansas.

Michael L. Sweet (M.S. 83) says he managed to survive a wave of layoffs in 1992 at BP Exploration and was recently transfered to its office in Aberdeen, Scotland, where he works as a sedimentologist. The high point of 1992, he adds, was the birth of his son, Philip.

Christopher Fielitz (B.S. 84, B.S. 89 Biology) has started toward his Ph.D. at the University of Kansas in Lawrence. He is working on the systematics of a group of extinct Cretaceous fishes known as the Enchodontids. His master's work was on a Cretaceous fish fauna from the Canadian Arctic. In his spare time, Fielitz bicycles a lot and brews his own beer.

Mark P. Fischer (B.S. 87) and his wife, Tamara (B.S.W. 87), celebrated the birth of their daughter, Sarah Caroline, on Dec. 10, 1991. The family lives in State College, Pa.

Nancye Dawers (M.S. 87) was singled out in *Geotimes'* Annual Geoscience Highlights for 1992 along with colleague M. Anders for their dataset presented at the Geological Society of America meeting in Cincinnati. They work at the Lamont-Doherty Geological Observatory in Pallisades, N.Y. The dataset, which was part of a theme session on formation of fault systems, showed self-similarity over three orders of magnitude in the length-displacement relationship of faults from the "Volcanic Tablelands" of eastern California.

Jennifer M. Wagner (B.S. 88) was married to Daniel D. Rath Nov. 30, 1991, in Oak Brook, Ill. Jennifer works for Allstate as an actuarial student. The couple live in Schaumburg.

Sandra Finley (B.S. 88) of Casper, Wyo., has been put in charge of the distribution committee for the Wyoming Geological Association.

Terry Pollock (B.S. 89) is employed by the New Mexico Bureau of Mines and Mineral Resources in Socorro, working on Precambrian geochronology of New Mexico under Dr. Paul Bauer with a publication soon to be released. He planned to finish his master's thesis in May. His research deals with Proterozoic deformation and metamorphism in a multiple deformed terrain bordering the west edge of the Rio Grande rift.

NINETIES

As a way to better understand the evolution of thrust belts, **Marlon S. Wilkerson** (Ph.D. 91) of Houston, Texas, and U. of I. Geology Professor Steve Marshak created a sandbox model that documented a linear relationship between the distance from the backstop to the first-formed thrust and the initial layer thickness (The Effect of Overburden Thickness on Thrustbelt Geometry and Development; *Tectonics*, v. 11, n. 3; p. 560-566).

Please take a few moments to let us and your class mates know what you've been doing: promotions, publications, election to office, marriages, parenthood, moving, awards. We'd all like to hear from you!

Name_____ Response date_____

Home address_____ Office Address_____
(indicate if changed)

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Degrees from Illinois (with year)_____ Degrees from other universities_____

Present employer and brief job description_____

Other news you would like to share_____

Your comments on the alumni newsletter _____

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